

CAV2/COV_N2

With valve

Cylinder with valve

ø50/ø75/ø100

Overview

Cylinder with valve available in three bore sizes (ø50, ø75 and ø100).

Lubrication/no-lubrication and single solenoid/double solenoid can be selected.



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The cylinder switches T2YH, T2YV, T3YH, and T3YV are scheduled for end of production at the end of December 2023.

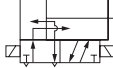
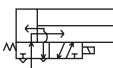
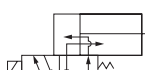
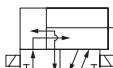
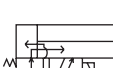
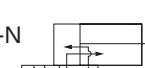
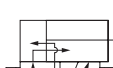
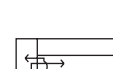
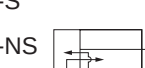
SCP*3
CMK2
CMA2
SCM
SCG
SCA2
SCS2
CKV2
CAV2/COVP/N2
SSD2
SSG
SSD
CAT
MDC2
MVC
SMG
MSD/MSDG
FC*
STK
SRL3
SRG3
SRM3
SRT3
MRL2
MRG2
SM-25
ShkAbs
FJ
FK
Spd Contr
Ending

Series variation



Cylinder with valve CAV2/COV^P_N2 Series

SCP*3
CMK2
CMA2
SCM
SCG
SCA2
SCS2
CKV2
CAV2/ COVPIN2
SSD2
SSG
SSD
CAT
MDC2
MVC
SMG
MSD/ MSDG
FC*
STK
SRL3
SRG3
SRM3
SRT3
MRL2
MRG2
SM-25
ShkAbs
FJ
FK
Spd Contr
Ending

Variation	Model No. JIS symbol	Bore size (mm)	Standard stroke (mm)						Min. stroke (mm)	Max. stroke (mm)	Available stroke (mm)	Custom stroke (per mm)	
			50	75	100	150	200	300					
Double acting/ double solenoid, lubrication	CAV2 	ø50	●	●	●	●	●	●	1	500	1000	1	
		ø75	●	●	●	●	●	●		600			
		ø100	●	●	●	●	●	●		800			
Double acting/single solenoid, push out when energized lubrication	COVP2 	ø50	●	●	●	●	●	●	1	500	1000	1	
		ø75	●	●	●	●	●	●		600			
		ø100	●	●	●	●	●	●		800			
Double acting/single solenoid, pull when energized, lubrication	COVN2 	ø50	●	●	●	●	●	●	1	500	1000	1	
		ø75	●	●	●	●	●	●		600			
		ø100	●	●	●	●	●	●		800			
Double acting/ double solenoid, no-lubrication	CAV2-N 	ø50	●	●	●	●	●	●	1	500	1000	1	
		ø75	●	●	●	●	●	●		600			
		ø100	●	●	●	●	●	●		800			
Double acting/single solenoid, push out when energized no-lubrication	COVP2-N 	ø50	●	●	●	●	●	●	1	500	1000	1	
		ø75	●	●	●	●	●	●		600			
		ø100	●	●	●	●	●	●		800			
Double acting/single solenoid, pull when energized, no-lubrication	COVN2-N 	ø50	●	●	●	●	●	●	1	500	1000	1	
		ø75	●	●	●	●	●	●		600			
		ø100	●	●	●	●	●	●		800			
Double acting/double solenoid, with cushion, short overall length	CAV2-S  CAV2-NS	ø50	●	●	●	●	●	●	1	500	1000	1	
		ø75	●	●	●	●	●	●		600			
		ø100	●	●	●	●	●	●		800			
Double acting/single solenoid, push out when energized, with cushion, short overall length	COVP2-S  COVP2-NS	ø50	●	●	●	●	●	●	1	500	1000	1	
		ø75	●	●	●	●	●	●		600			
		ø100	●	●	●	●	●	●		800			
Double acting/single solenoid, pull when energized, with cushion, short overall length	COVN2-S  COVN2-NS	ø50	●	●	●	●	●	●	1	500	1000	1	
		ø75	●	●	●	●	●	●		600			
		ø100	●	●	●	●	●	●		800			

●: Standard ○: Option ■: Not available

	Mounting					Cushion		Option						Accessory			Switch	Page					
	Axial foot	Rod side flange	Eye bracket	Intermediate trunnion, shaft	Intermediate trunnion, supporting hole	Without cushion	Both sides cushioned	Bellows (100°C)	Round terminal box	Square terminal box	With muffler	Molded coil	Air supply block	Rod eye	Rod clevis	Clevis bracket							
																			LB	FA	CA	TC	TF
	●	●	●	●	●	●	●	○	○	○	○	○	○	○	○	○	○	○	○	○	710		
	●	●	●	●	●	●	●	○	○	○	○	○	○	○	○	○	○	○	○				
	●	●	●	●	●	●	●	○	○	○	○	○	○	○	○	○	○	○	○				
	●	●	●	●	●	●	●	○	○		○	●	○	○	○	○	○	○	○	○	○	710	
	●	●	●	●	●	●	●	○	○		○	●	○	○	○	○	○	○	○				
	●	●	●	●	●	●	●	○	○		○	●	○	○	○	○	○	○	○				
	●	●	●	●	●	●	●	○	○		○	●	○	○	○	○	○	○	○	○	○	○	710
	●	●	●	●	●	●	●	○	○		○	●	○	○	○	○	○	○	○				
	●	●	●	●	●	●	●	○	○		○	●	○	○	○	○	○	○	○				
	●	●	●	●	●	●	●	○	○		○	●	○	○	○	○	○	○	○	○	○	○	710
	●	●	●	●	●	●	●	○	○		○	●	○	○	○	○	○	○	○				
	●	●	●	●	●	●	●	○	○		○	●	○	○	○	○	○	○	○				
	●	●	●	●	●		●	○	○		○	Lubrication ○	○	○	○	○	○	○	○	○	○	710	
	●	●	●	●	●		●	○	○		○	No lubrication ●	○	○	○	○	○	○	○				
	●	●	●	●	●		●	○	○		○	Lubrication ○	○	○	○	○	○	○	○				
	●	●	●	●	●		●	○	○		○	No lubrication ●	○	○	○	○	○	○	○	○	○	710	
	●	●	●	●	●		●	○	○		○	Lubrication ○	○	○	○	○	○	○	○				
	●	●	●	●	●		●	○	○		○	No lubrication ●	○	○	○	○	○	○	○				
	●	●	●	●	●		●	○	○		○	Lubrication ○	○	○	○	○	○	○	○	○	○	710	
	●	●	●	●	●		●	○	○		○	No lubrication ●	○	○	○	○	○	○	○				
	●	●	●	●	●		●	○	○		○	Lubrication ○	○	○	○	○	○	○	○				

SCP*3
CMK2
CMA2
SCM
SCG
SCA2
SCS2
CKV2
CAV2/COVPIN2
SSD2
SSG
SSD
CAT
MDC2
MVC
SMG
MSD/MSDG
FC*
STK
SRL3
SRG3
SRM3
SRT3
MRL2
MRG2
SM-25
ShkAbs
FJ
FK
Spd Contr
Ending

CAV2(-S)/CAV2-N(S) COV^P2(-S)/COV^P2-N(S) Series

Variation and option combination selection table

⊙: Option
○: Available (made-to-order product)
△: Available depending on conditions (Contact CKD.)
x: Not available

Category		Category	Variation								Port thread		Option						
			Double acting basic (lubrication)	No lubrication	Short overall length	Double solenoid	Single solenoid	Cushioned	With cylinder switch	NPT	G		Neoprene with bellows	Round terminal box	Square terminal box	With muffler	Molded coil	Intake block	Specify piston rod end form
		Code	None	N	S	CAV2	COV*2	None	None	N	G		J	TB1	TB2	MF1	Z	Q	N*
Variation	Double acting basic (lubrication)	Blank			⊙	⊙	⊙	⊙	⊙	○	○		⊙	⊙	⊙	⊙	⊙	⊙	○
	No lubrication	N			⊙	⊙	⊙	⊙	⊙	○	○		⊙	⊙	⊙	x	⊙	⊙	○
	Short overall length	S				⊙	⊙	*1	⊙	○	○		⊙	⊙	⊙	⊙	⊙	⊙	○
	Double solenoid	CAV2						⊙	⊙	○	○		⊙	⊙	⊙	⊙	⊙	⊙	○
	Single solenoid	COV*2						⊙	⊙	○	○		⊙	⊙	x	⊙	*2	⊙	○
	Cushioned	Blank							⊙	○	○		⊙	⊙	⊙	⊙	⊙	⊙	○
	With cylinder switch	Blank								○	○		⊙	⊙	⊙	⊙	⊙	⊙	○
Port thread	NPT	N									x		○	○	○	○	○	○	○
	G	G											○	○	○	○	○	○	○
Option	Neoprene with bellows	J											⊙	⊙	⊙	⊙	⊙	○	
	Round terminal box	TB1												x	⊙	⊙	x	○	
	Square terminal box	TB2													⊙	⊙	x	○	
	With muffler	MF1														⊙	⊙	○	
	Molded coil	Z															x	○	
	Intake block	Q																○	
	Specify piston rod end form	N*																	
Accessory	Cylinder switch	Listed separately	⊙	⊙	⊙	⊙	⊙	⊙	⊙	○	○		⊙	⊙	⊙	⊙	⊙	○	
	Rod eye	I	⊙	⊙	⊙	⊙	⊙	⊙	⊙	○	○		⊙	⊙	⊙	⊙	⊙	△	
	Rod clevis	Y	⊙	⊙	⊙	⊙	⊙	⊙	⊙	○	○		⊙	⊙	⊙	⊙	⊙	△	
	Clevis bracket	B2	⊙	⊙	⊙	⊙	⊙	⊙	⊙	○	○		⊙	⊙	⊙	⊙	⊙	○	

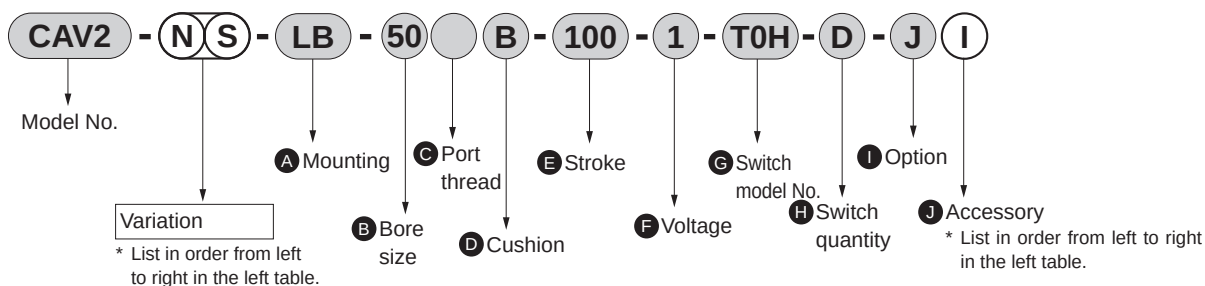
*1: Short overall length is available only for the type with cushion.

*2: COV*2 coil is molded as standard.

CAV2(-S)/CAV2-N(S) COV^P_N2(-S)/COV^P_N2-N(S) Series

Variation and option combination selection table

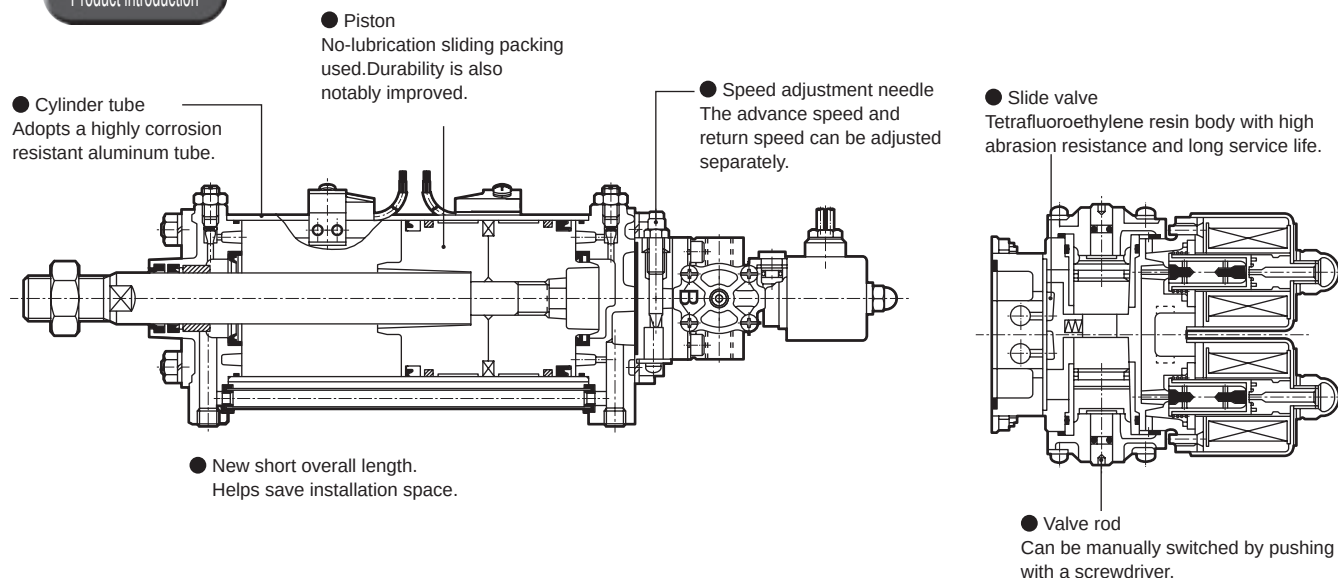
[Example of model No.]



Model No.: Cylinder with valve

- Variation: No lubrication, with cushion, short overall length
- A Mounting : Axial foot
- B Bore size : ø50 mm
- C Port thread : Rc thread
- D Cushion : Both sides cushioned
- E Stroke : 100 mm
- F Voltage : 100 VAC
- G Switch model No.: Reed T0H switch, lead wire 1m
- H Switch quantity : 2
- I Option : Bellows for max. ambient temperature 60°C
- J Accessory : Rod eye

Product introduction



SCP*3
CMK2
CMA2
SCM
SCG
SCA2
SCS2
CKV2
CAV2/ COV ^P _N 2
SSD2
SSG
SSD
CAT
MDC2
MVC
SMG
MSD/ MSDG
FC*
STK
SRL3
SRG3
SRM3
SRT3
MRL2
MRG2
SM-25
ShkAbs
FJ
FK
Spd Contr
Ending

CAV2(-S)/CAV2-N(S)

COV^P_N2(-S)/COV^P_N2-N(S) Series

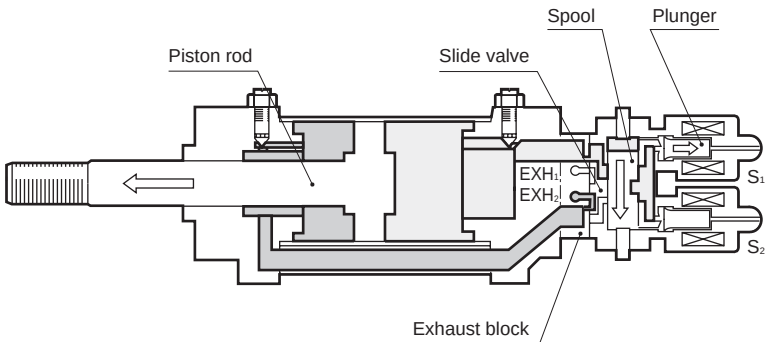
Operational explanation

Air supply
 Exhaust
 For explanation purposes, the valve position is rotated 90° counterclockwise when viewed from the piston rod side.

● CAV2/CAV2-N/CAV2-S/CAV2-NS

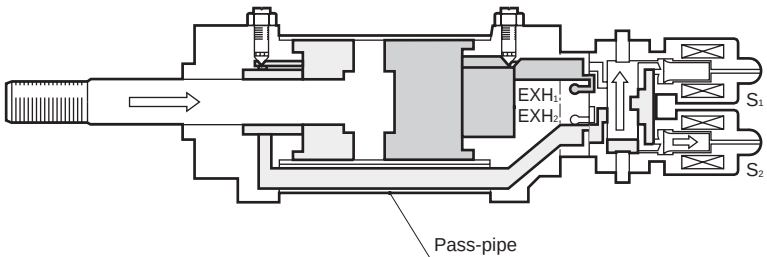
A Piston rod push type

- When the solenoid S1 is energized, the plunger is suctioned.
- The orifice opens, air moves the spool and the slide valve moves down.
- Soon the air passes the exhaust block and enters the cylinder, pushing the piston rod.
- As the spool is self-held after the solenoid valve S1 is de-energized, the piston rod remains protruding.



B Piston rod pull type

- When the solenoid S2 is energized, the plunger is suctioned.
- The orifice opens, air moves the spool and the slide valve moves up.
- Soon the air passes the exhaust block and pass-pipe and enters the cylinder, pulling the piston rod.
- As the spool is self-held after the solenoid valve S2 is de-energized, the piston rod remains retracted.

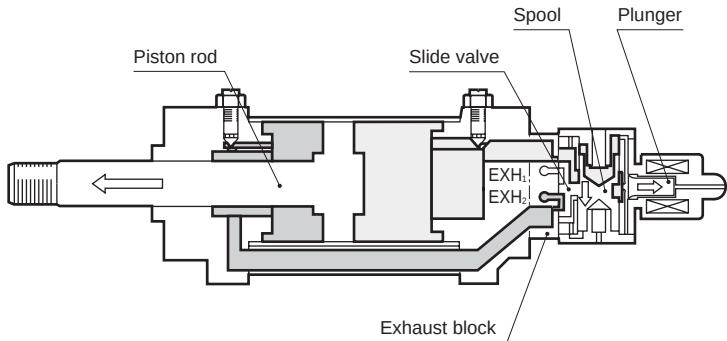


● COV^P_N2/COV^P_N2-N/COV^P_N2-S/COV^P_N2-NS

The explanation below is for the type of push when energized (P). The type retracted in when energized (N) operates in the reverse direction.

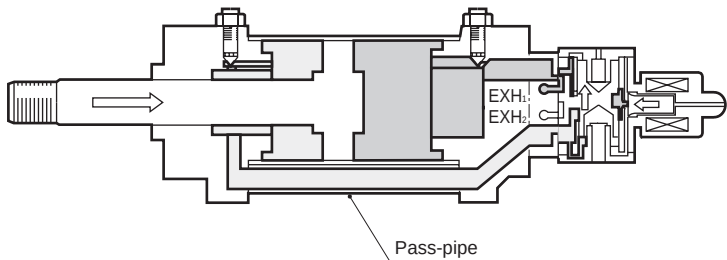
A When the solenoid valve is energized

- When the solenoid valve is energized, the plunger is suctioned and the orifice opens.
- The force on the upper side of the spool becomes larger than that on the lower side and moves the spool. The slide valve moves down. (This occurs due to difference of the pressurized areas.)
- Soon the air passes the exhaust block and enters the cylinder, pushing the piston rod.



B When the solenoid valve is deenergized

- When the solenoid valve is deenergized, the plunger is pushed down by the spring and closes the orifice.
- As compressed air does not flow into the upper side of the spool, the force on the lower side of the spool becomes larger and moves the spool. The slide valve moves up.
- Soon the air passes the exhaust block and pass-pipe and enters the cylinder, pulling the piston rod.



C How to switch push out when energized and retracted in when energized

*1:The factory setting is push when energized.

⚠ CAUTION

*1: Be sure to stop air before switching.

- Loosen and remove the screws of the cap ⑥ and fixing piston ① (four screws each) with a Phillips screwdriver as shown in Fig. 1.
- Switch the positions of the cap ⑥ and fixing piston ① as shown in Fig. 2 and tighten the screws.

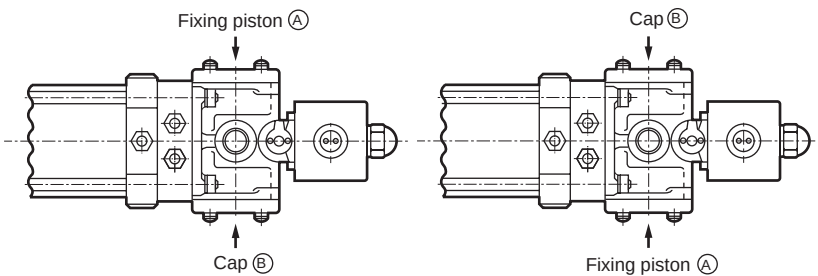


Fig. 1 Push when energized

Fig. 2 Retracted in when energized

MEMO

SCP*3

CMK2

CMA2

SCM

SCG

SCA2

SCS2

CKV2

CAV2/
COVPIN2

SSD2

SSG

SSD

CAT

MDC2

MVC

SMG

MSD/
MSDG

FC*

STK

SRL3

SRG3

SRM3

SRT3

MRL2

MRG2

SM-25

ShkAbs

FJ

FK

Spd
Contr

Ending

SCP*3

CMK2

CMA2

SCM

SCG

SCA2

SCS2

CKV2

CAV2/
COVPIN2

SSD2

SSG

SSD

CAT

MDC2

MVC

SMG

MSD/
MSDG

FC*

STK

SRL3

SRG3

SRM3

SRT3

MRL2

MRG2

SM-25

ShkAbs

FJ

FK

Spd
Contr

Ending

Cylinder with valve

CAV2(-S)/CAV2-N(S)
COV^P_N2(-S)/COV^P_N2-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	
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.

CAV2(-S)/CAV2-N(S)
COV^P_N2(-S)/COV^P_N2-N(S) Series

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	1 m:18	1 m:33	1 m:18	1 m:18		1 m:33	1 m:18	1 m:18 3 m:49 5 m:80				1 m:33			1 m:61	
	3 m:87	3 m:49	3 m:87	3 m:49	3 m:49		3 m:87	3 m:49					3 m:87			3 m:166	
	5 m:142	5 m:80	5 m:142	5 m:80	5 m:80		5 m:142	5 m:80					5 m:142			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				
		CAV2	COV ^P _N 2	CAV2	COV ^P _N 2	CAV2	COV ^P _N 2	CAV2	COV ^P _N 2			
Bore size (mm)		CAV2-S	COV ^P _N 2-S	CAV2-S	COV ^P _N 2-S	CAV2-S	COV ^P _N 2-S	CAV2-S	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 x $\frac{200}{100}$ = 1.0 kg Weight of 1 switch 0.018 kg Product weight 2.1 kg + 1.0 kg + 0.018 kg = 3.118 kg												

CAV2(-S)/CAV2-N(S) COV_N^P2(-S)/COV_N^P2-N(S) Series

Specifications

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
ø50	Push	2.95x10 ²	3.93x10 ²	5.89x10 ²	7.85x10 ²	9.82x10 ²	1.18x10 ³	1.37x10 ³
	Pull	2.48x10 ²	3.30x10 ²	4.95x10 ²	6.60x10 ²	8.25x10 ²	9.90x10 ²	1.15x10 ³
ø75	Push	6.63x10 ²	8.84x10 ²	1.33x10 ³	1.77x10 ³	2.21x10 ³	2.65x10 ³	3.09x10 ³
	Pull	5.90x10 ²	7.85x10 ²	1.18x10 ³	1.57x10 ³	1.96x10 ³	2.36x10 ³	2.75x10 ³
ø100	Push	1.18x10 ³	1.57x10 ³	2.36x10 ³	3.14x10 ³	3.93x10 ³	4.71x10 ³	5.50x10 ³
	Pull	1.11x10 ³	1.47x10 ³	2.21x10 ³	2.95x10 ³	3.68x10 ³	4.42x10 ³	5.15x10 ³

SCP*3

CMK2

CMA2

SCM

SCG

SCA2

SCS2

CKV2

CAV2/
COV_N^PIN2

SSD2

SSG

SSD

CAT

MDC2

MVC

SMG

MSD/
MSDG

FC*

STK

SRL3

SRG3

SRM3

SRT3

MRL2

MRG2

SM-25

ShkAbs

FJ

FK

Spd
Contr

Ending

CAV2(-S)/CAV2-N(S) COV^P2(-S)/COV^P2-N(S) Series

How to order

No switch (built-in magnet for switch)

CAV2-LB-50B-100-1-J-I

With switch (built-in magnet for switch)

CAV2-LB-50B-100-1-T0H-R-J-I

A Model No.

B Variation

C Mounting

D Bore size

E Port thread

F Cushion

G Stroke
*1

H Voltage

I Switch model No.

J Switch quantity

K Option

*3, *4

*8

L Accessory

*5, *6

⚠ Precautions for model No. selection

*1 : A non-sag block is attached per 500 mm if the stroke is longer than 500 mm.

*2 : Refer to page 711 for the min. stroke with switch.

*3 : "TB2" is not available for the "CA" mounting of ø75 and ø100.

*4 : The instantaneous max. temperature is the temperature when sparks, cutting chips, etc., instantaneously contact the bellows.

*5 : "I" and "Y" cannot be selected together.

*6 : "B2" is not available for the "TC" and "TF" mounting.

*7 : If option "Q" is selected then the only other option available is "J".

*8 : Because COVP2 and COVN2 use a molded coil as standard, option Z is not available.

[Example of model No.]

CAV2-LB-50B-100-1-T0H-R-JY

Model: Cylinder with valve

A Model No. : Double acting double solenoid

B Variation : Lubrication

C Mounting : Axial foot

D Bore size : ø50 mm

E Port thread : Rc thread

F Cushion : Both sides cushioned

G Stroke : 100 mm

H Voltage : 100 VAC

I Switch model No.: Reed T0H switch, lead wire 1m

J Switch quantity : 1 on rod side

K Option : Bellows for max. ambient temperature 100°C

L Accessory : Rod clevis

Code	Description		
A Model No.			
CAV2	Double acting double solenoid		
COVP2	Double acting single solenoid, push out when energized		
COVN2	Double acting single solenoid, pull when energized		
B Variation			
Blank	Lubrication		
N	No lubrication		
S	Short overall length with cushion, lubrication		
NS	Short overall length with cushion, no-lubrication		
C Mounting			
LB	Axial foot		
FA	Rod side flange		
CA	Clevis		
TC	Intermediate trunnion (shaft)		
TF	Intermediate trunnion (supporting hole)		
D Bore size (mm)			
50	ø50		
75	ø75		
100	ø100		
E Port thread			
Blank	Rc thread		
N	NPT thread (made-to-order product)		
G	G thread (made-to-order product)		
F Cushion			
B	Both sides cushioned		
N	No cushion (cannot be selected for short overall length with cushion.)		
G Standard stroke (mm)			
Bore size	Stroke *2	Available stroke	Custom stroke
ø50	1 to 500	1000	In 1 mm increments
ø75	1 to 600	1000	
ø100	1 to 800	1000	
H Voltage			
Blank	When selecting K Option "Q" air supply block		
1	100 VAC		
2	200 VAC		
DC24V	24 VDC (made to order)		
I Switch model No.			
Refer to the switch model No. table on the following page.			
* Lead wire length			
Blank	1 m (standard)		
3	3 m (option)		
5	5 m (option)		
J Switch quantity			
R	1 on rod side		
H	1 on head side		
D	2		
T	3		
K Option			
		Max. ambient temp.	Instantaneous max. temp
J	Bellows	100°C	200°C
TB1	Round terminal box		
TB2	Square terminal box (cannot be selected for single solenoid.)		
MF1	With muffler (Lubrication only. Attached as standard with no-lubrication)		
Z	Molded coil (applicable to CAV2 only)		
Q	Air supply block		
L Accessory			
I	Rod eye		
Y	Rod clevis (with pin, washer, split pin)		
B2	Clevis bracket (with pin, washer, split pin)		

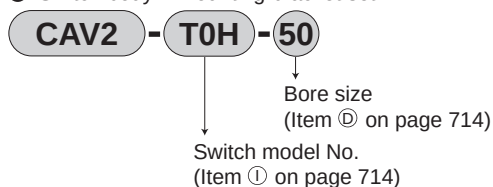
[I] Switch model No.

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

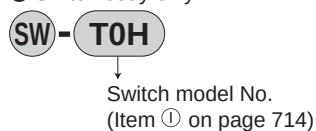
How to order switch

T-switch

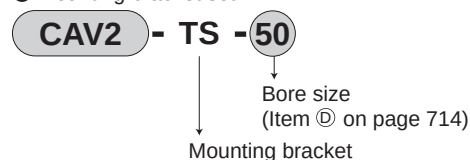
● Switch body + mounting bracket set



● Switch body only



● Mounting bracket set



Mounting bracket model No.

Bore size (mm)	ø50	ø75	ø100
Mounting bracket			
Foot (LB)	CAV2-50-LB	CAV2-75-LB	CAV2-100-LB
Flange (FA)	CAV2-50-FA	CAV2-75-FA	CAV2-100-FA
Clevis (CA)	CAV2-50-CA	CAV2-75-CA	CAV2-100-CA
Shaft trunnion (TC)	CAV2-50-TC	CAV2-75-TC	CAV2-100-TC
Supporting hole (TF)	CAV2-50-TF	CAV2-75-TF	CAV2-100-TF

*1: The model numbers above are for the mounting brackets only and do not include tie rods.

*2: The foot mounting bracket is provided as 2 pcs./set.

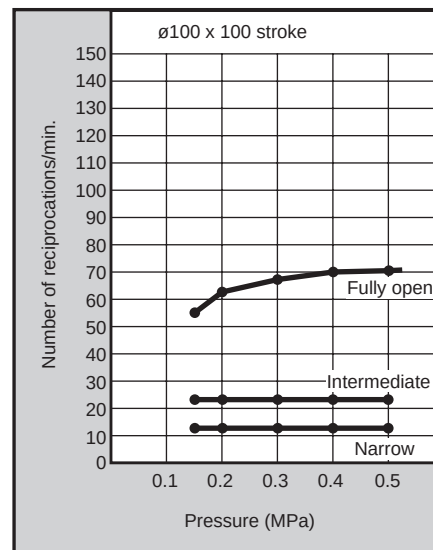
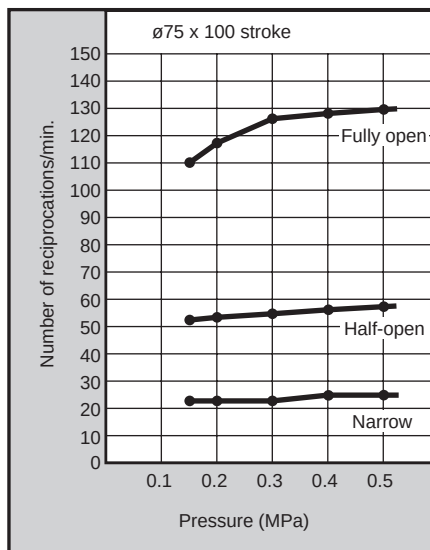
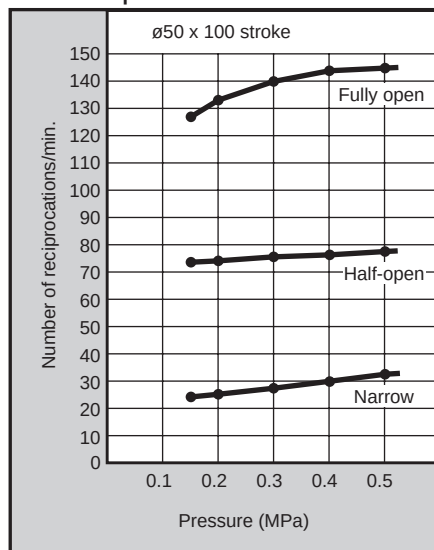
Valve model No.

Model No.		Model No.
CAV2	Lubrication	CAV2-ACTUATOR-*1
		CAV2-ACTUATOR-*1-Z (molded coil)
	No-lubrication	CAV2-N-ACTUATOR-*1
		CAV2-N-ACTUATOR-*1-Z (molded coil)
COVP2	Lubrication	COVP2-ACTUATOR-*1
	No-lubrication	COVP2-N-ACTUATOR-*1
COVN2	Lubrication	COVN2-ACTUATOR-*1
	No-lubrication	COVN2-N-ACTUATOR-*1

Note: Indicate voltage in *1.

1.....100 VAC, 2.....200 VAC

Piston speed



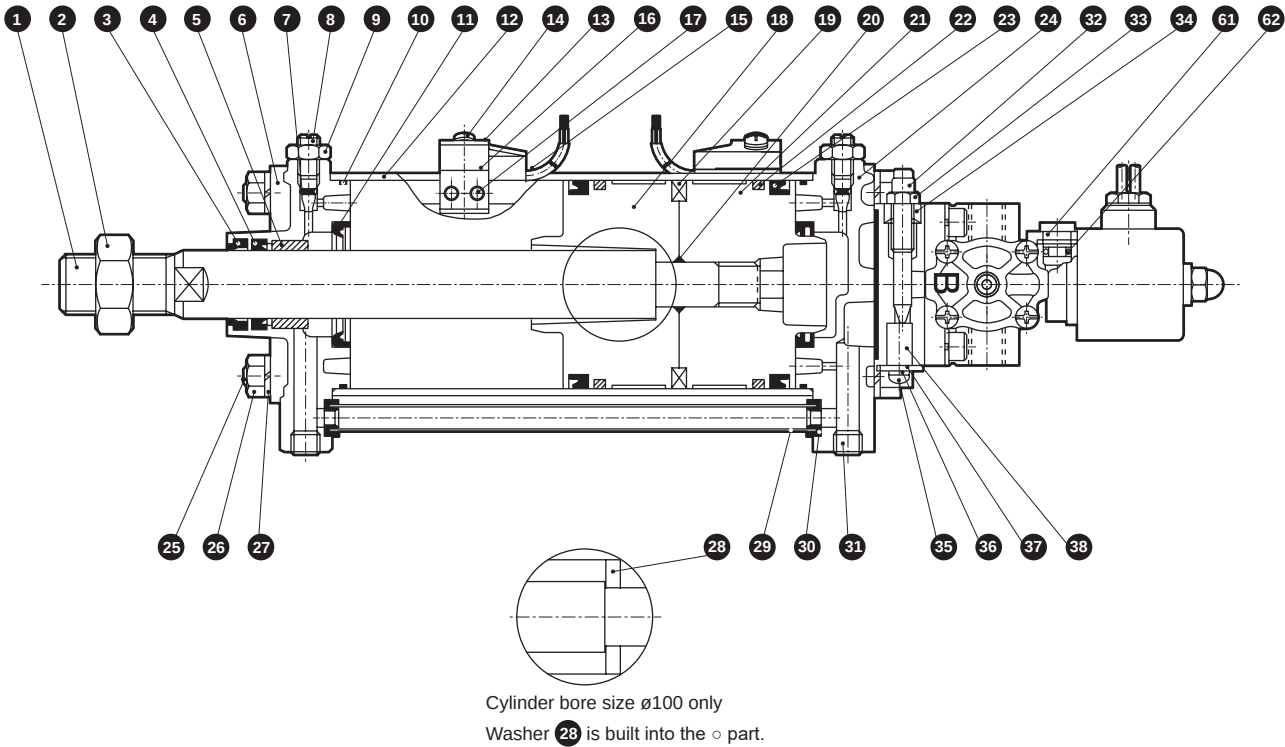
Note: Narrow, half-open and fully open are the degree of opening of the speed adjustment needle. The values are those without load.

CAV2(-S)/CAV2-N(S)

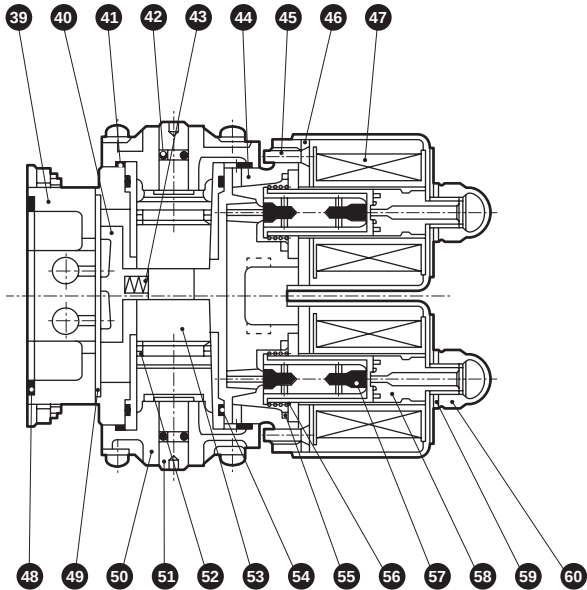
COV^P_N2(-S)/COV^P_N2-N(S) Series

Internal structure and parts list

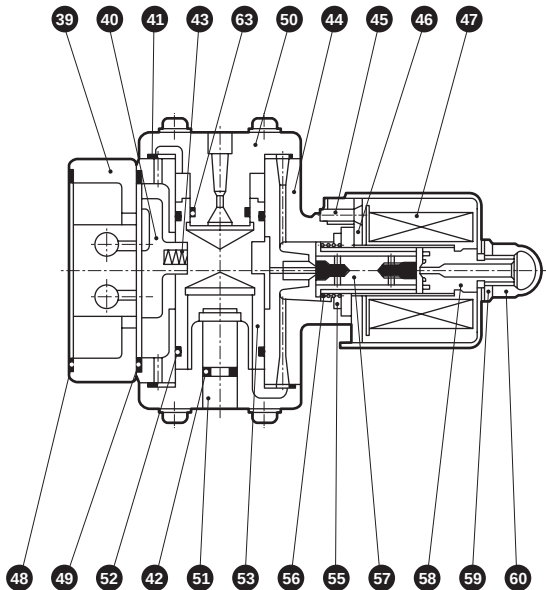
● CAV2, COV^P_N 2



● CAV2, CAV2-N (double solenoid)



● COV^P_N 2, COV^P_N 2-N (single solenoid)



CAV2(-S)/CAV2-N(S) COV_N^P2(-S)/COV_N^P2-N(S) Series

Internal structure and parts list

Parts list

No.	Part name	Material	Remarks	No.	Part name	Material	Remarks
1	Piston rod	Steel	Industrial chrome plating	33	Lock nut	Steel	Zinc chromate
2	Hexagon nut	Steel	Zinc chromate	34	U nut	Steel	Zinc chromate
3	Dust wiper	Nitrile rubber		35	Phillips pan head machine screw	Steel	Zinc chromate [no-lubrication only]
4	Rod packing	Nitrile rubber		36	Spring washer	Steel	Zinc chromate [no-lubrication only]
5	Bush	Oil impregnated bearing alloy		37	Muffler retainer plate	Steel	Zinc chromate [no-lubrication only]
6	Rod cover	Aluminum alloy die-casting	Paint	38	Element	Resin	[no-lubrication only]
7	Needle gasket	Nitrile rubber		39	Exhaust block	Aluminum alloy die-casting	Hard alumite (lubrication only) Nickeling (no-lubrication only)
8	Cushion needle	Copper alloy		40	Slide valve	Tetrafluoroethylene resin	
9	Needle nut	Copper alloy		41	Cap gasket	Nitrile rubber	
10	Cylinder gasket	Nitrile rubber		42	Rod gasket	Nitrile rubber	O-ring
11	Cushion packing	Nitrile rubber/steel		43	Port spring	Stainless steel	
12	Cylinder tube	Aluminum alloy	Hard alumite	44	Port body	Aluminum alloy die-casting	
13	Switch holder	Stainless steel		45	Phillips flat head machine screw	Steel	Zinc chromate
14	Phillips pan head machine screw	Steel		46	Ring core	Steel	
15	Cylinder switch			47	Coil assembly		Bobbin [CAV2], molded [COV2]
16	Switch mounting base	Aluminum alloy		48	Exhaust block gasket	Nitrile rubber	
17	Set screw	Steel		49	Port body gasket	Nitrile rubber	
18	Piston (R)	Aluminum alloy die-casting		50	Cap	Aluminum alloy die-casting	
19	Magnet	Plastic		51	Valve rod	Aluminum alloy	
20	Piston gasket	Nitrile rubber		52	Spool packing	Nitrile rubber	
21	Piston (H)	Aluminum alloy die-casting		53	Spool	Aluminum alloy	
22	Wear ring	Polyacetal resin		54	Sleeve gasket	Nitrile rubber	CAV*2 only
23	Piston packing	Nitrile rubber		55	Core gasket	Nitrile rubber	
24	Head cover	Aluminum alloy die-casting	Paint	56	Plunger spring	Stainless steel	
25	Tie rod	Steel	Zinc chromate	57	Plunger assembly	Stainless steel, nitrile rubber	
26	Hexagon nut	Steel	Zinc chromate	58	Core assembly	Stainless steel, copper	
27	Spring washer	Steel	Zinc chromate	59	Spring washer	Steel	
28	Washer	Steel	Zinc chromate [ø100 only]	60	Cap nut	Steel	
29	Pass-pipe	Aluminum alloy		61	Manual dial	Polyacetal resin	COV*2 only
30	Pipe gasket	Nitrile rubber		62	Manual gasket	Nitrile rubber	COV*2 only
31	Plug	Steel	Black finish	63	Spool packing	Nitrile rubber	COV*2 only
32	Speed adjustment needle	Steel	Nickeling				

*1: 7/8/9/11 are not used in the type without cushion.

Repair parts list of cylinder section

Tube Bore size (mm)	Kit No.	Repair parts No.
ø50	CAV2-50BK	3 4 7 10 11 22 23 30
ø75	CAV2-75BK	
ø100	CAV2-100BK	

Note: Common to the lubrication, no-lubrication, types with cushion and type without cushion.

7 and 11 are not used in the type without cushion.

Repair parts list of valve section

Valve	Kit No.	Repair parts No.
Double solenoid	CAV2-N-K	40 41 42 43 48 49 52 54 55 56 57
Single solenoid	COV2-N-K	40 41 42 43 48 49 52 55 56 57 63

Note: Common to the lubrication and no-lubrications.

Material of mounting bracket

Mounting	Material	Remarks
LB	Steel	Black finish
FA	Steel	Paint
CA	Cast iron	Paint
TC, TF	Cast iron	Paint

Note: All are assembled before shipment.

CAV2(-S)/CAV2-N(S) Series



Dimensions (Double solenoid CAV2)

- Axial foot (LB) ø50

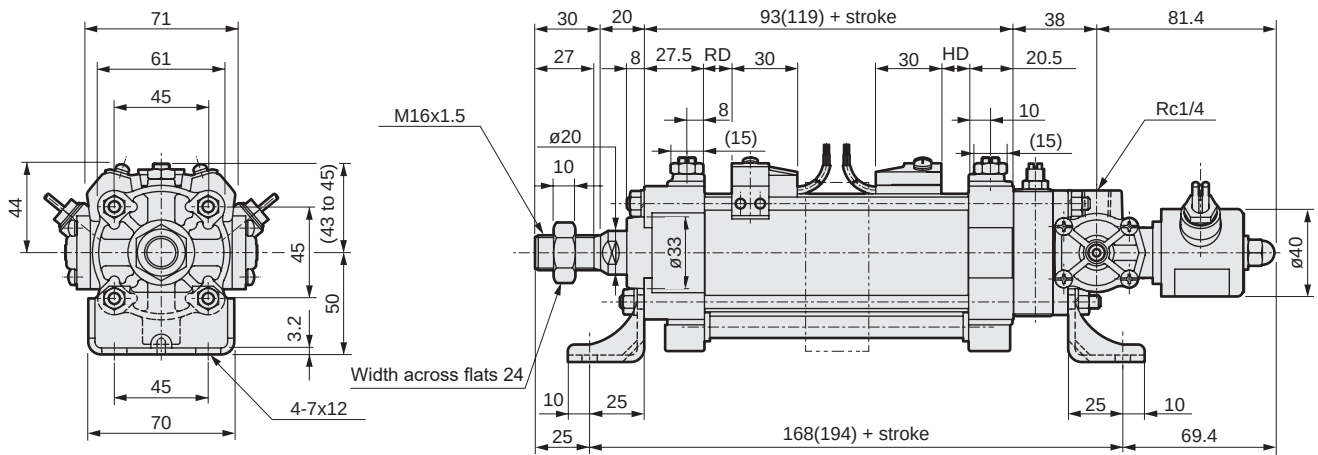
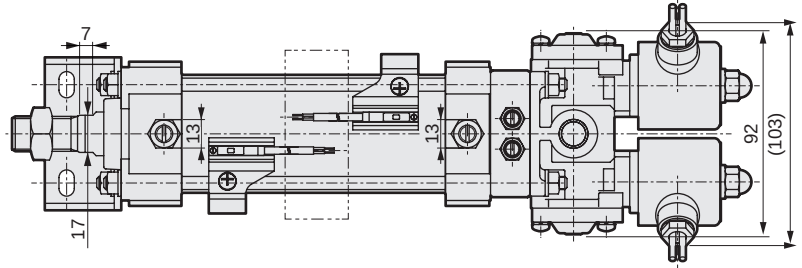
*1 : Dimensions in () are for the type with cushion (B).

*2 :For the L dimension, round up below the decimal point.

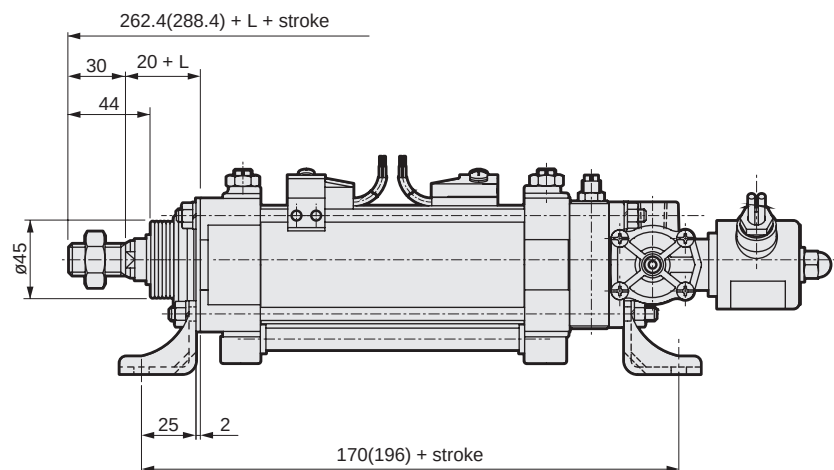
*3 : Dimensions of the short overall length with cushion (-S and -NS) are the same as those of the type without cushion (N) in this figure.

*4: For the dimensions of the accessories, refer to page 739.

*5:Non-sag block (2-dashed line) will be added depending on the stroke. Refer to page 730.



[With bellows]



Code	With bellows							With switch							
	L							T0, T5 T2, T3		T2W, T3W		T1, T2Y, T3Y, T2J		T8	
Bore size (mm)	50 or less	Over 50 to 100	Over 100 to 150	Over 150 to 200	Over 200 to 250	Over 250 to 300	Over 300	RD	HD	RD	HD	RD	HD	RD	HD
ø50	17	24	37	47	57	67	(Stroke/5)	12.5(25.5)		15.5(28.5)		12.5(25.5)		7(20.5)	

CAV2(-S)/CAV2-N(S) Series

Double acting/double solenoid

Dimensions (Double solenoid CAV2)



● Axial foot (LB) ø75/ø100

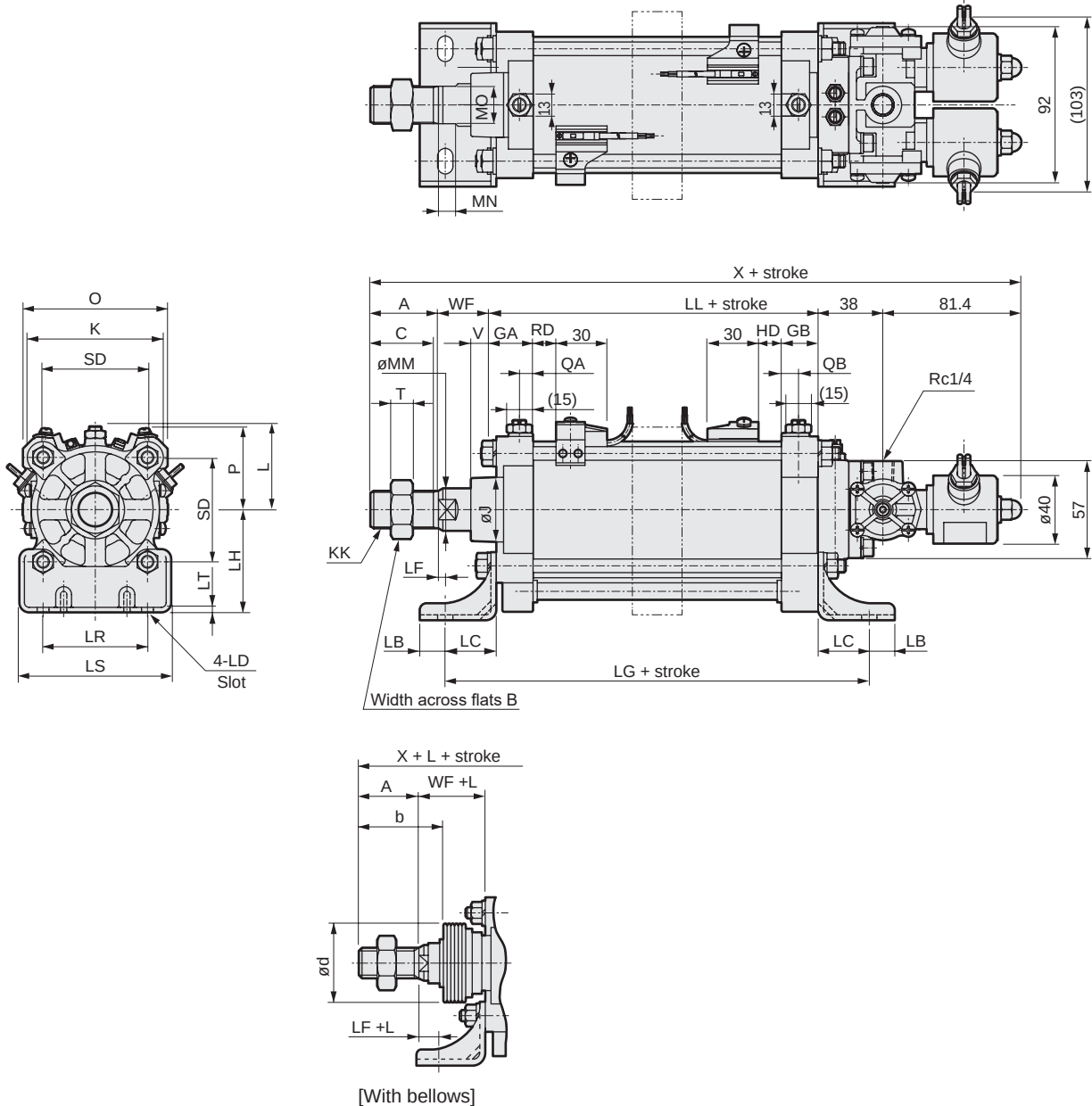
*1 : Dimensions in () are for the type with cushion (B).

*2 : For the L dimension, round up below the decimal point.

*3 : Dimensions of the short overall length with cushion (-S and -NS) are the same as those of the type without cushion (N) in this figure.

*4 : For the dimensions of the accessories, refer to page 739.

*5 : Non-sag block (2-dashed line) will be added depending on the stroke. Refer to page 730.



Code	Axial foot basic dimensions																				Mounting dimensions			
Bore size (mm)	A	B	C	GA	GB	J	K	KK	L	LL	MM	MN	MO	QA	QB	SD	T	V	WF	X	LB	LC	LD	
ø 75	40	32	37	22	22	38	86	M22x1.5	52 to 54	91(139)	25	10	22	8	10	66	13	15	34	284.4(332.4)	15	30	9x15	
ø100	40	32	37	24.5	24.5	38	109	M22x1.5	60.5 to 62.5	105(142)	25	10	22	10.7	10.7	86.3	13	15	35	299.4(336.4)	15	30	11x20	
Code	Mounting dimensions						With bellows									With switch								
Bore size (mm)	LF	LG	LH	LR	LS	LT	b	d	L							O	P	T0, T5		T2W,		T1, T2Y,		T8
									50 or less	Over 50 to 100	101 ≤ 150	151 ≤ 200	201 ≤ 250	251 ≤ 300	Over 300			T2, T3	T3W	T3Y, T2J				
																				RD	HD	RD	HD	
ø 75	4	151(199)	65	66	96	3.2	55	50	7	14	27	37	47	57	(Stroke/5)	92	52	13.5(37.5)	16.5(40.5)	13.5(37.5)	16.5(40.5)	8.5(32.5)		
ø100	5	165(202)	85	85	120	3.2	55	50	7	14	27	37	47	57	(Stroke/5)	118	64	17.5(36.0)	20.5(39.0)	17.5(36)	20.5(39.0)	12.5(31)		

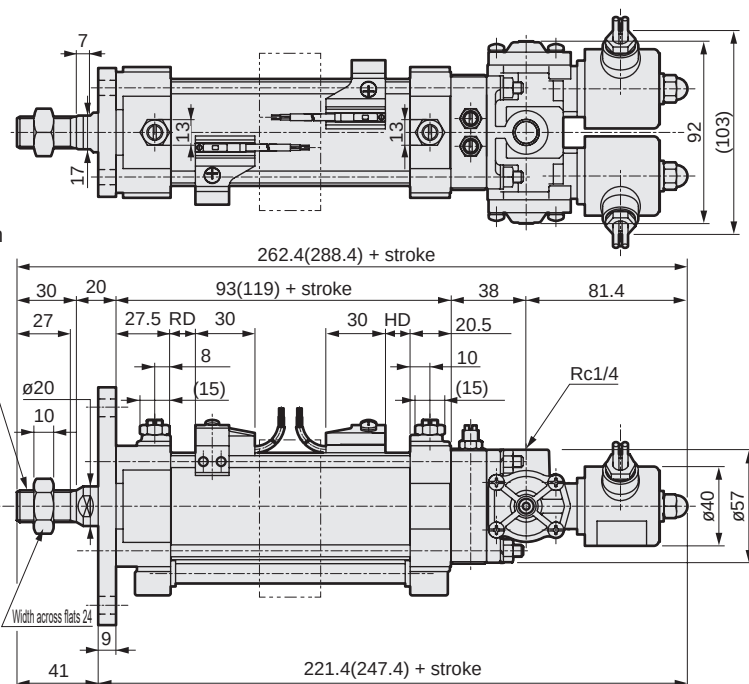
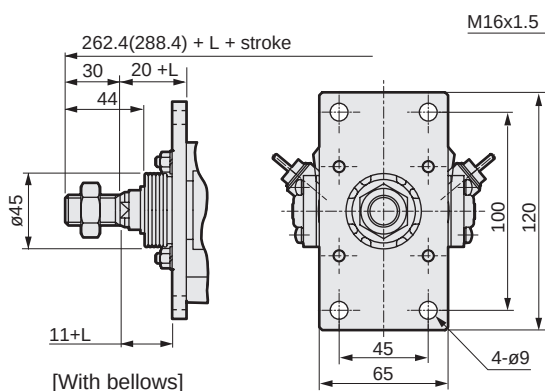
CAV2(-S)/CAV2-N(S) Series

Dimensions (Double solenoid CAV2)



● Rod side flange (FA) ø50

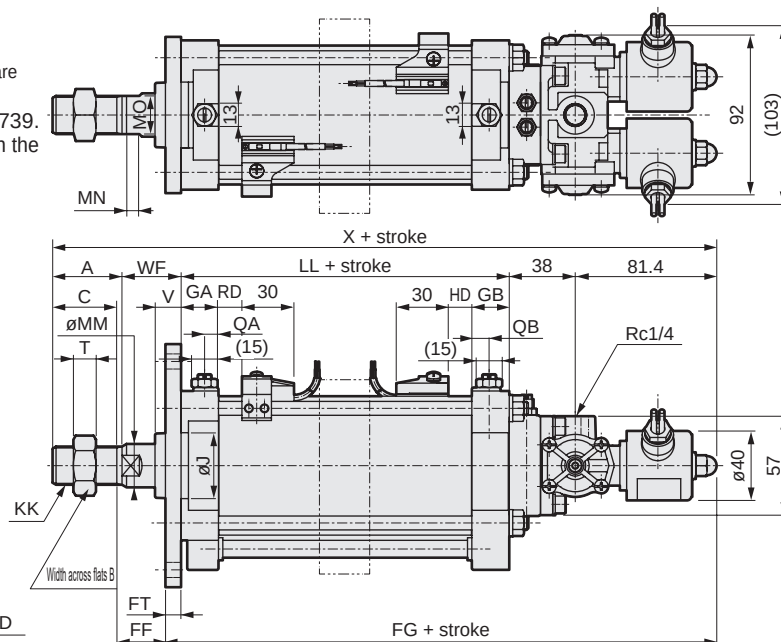
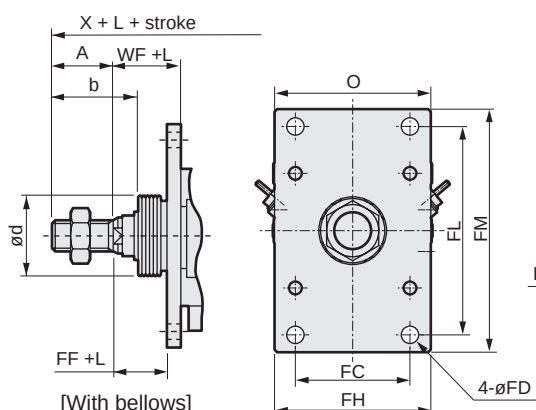
- *1 : Dimensions in () are for the type with cushion (B).
- *2 : For the L dimension, round up below the decimal point.
- *3 : Dimensions of the short overall length with cushion (-S and -NS) are the same as those of the type without cushion (N) in this figure.
- *4 : In the type with bellows, the bellows installation surface and the hexagon nut (M6) will protrude from the flange installation surface. Therefore, provide depth of ø77 or more and clearance of 11 or more.
- *5 : For the dimensions of the accessories, refer to page 739.
- *6 : Non-sag block (2-dashed line) will be added depending on the stroke. Refer to page 730.



Code	With bellows							With switch							
	L							T0, T5 T2, T3		T2W, T3W		T1, T2Y, T3Y, T2J		T8	
	Bore size (mm)	50 or less	Over 50 to 100	Over 100 to 150	Over 150 to 200	Over 200 to 250	Over 250 to 300								
RD								HD	RD	HD	RD	HD	RD	HD	
ø50	17	24	37	47	57	67	(Stroke/5)	12.5(25.5)	15.5(28.5)	15.5(25.5)	7(20.5)				

● Rod side flange (FA) ø75/ø100

- *1 : Dimensions in () are for the type with cushion (B).
- *2 : For the L dimension, round up below the decimal point.
- *3 : Dimensions of the short overall length with cushion (-S and -NS) are the same as those of the type without cushion (N) in this figure.
- *4 : For the dimensions of the accessories, refer to page 739.
- *5 : Non-sag block (2-dashed line) will be added depending on the stroke. Refer to page 730.



Code	Rod side flange basic dimensions																	Mounting dimensions						
Bore size (mm)	A	B	C	GA	GB	J	KK	LL	MM	MN	MO	QA	QB	T	V	WF	X	FC	FD	FF				
ø 75	40	32	37	22	22	38	M22x1.5	91(139)	25	10	22	8	10	13	15	34	284.4(332.4)	66	10	25				
ø100	40	32	37	24.5	24.5	38	M22x1.5	105(142)	25	10	22	10.7	10.7	13	15	35	299.4(336.4)	85	12	23				
Code	Mounting dimensions					With bellows								With switch										
Bore size (mm)	FG	FH	FL	FM	FT	b	d	L							O	P	T0, T5 T2, T3		T2W, T3W	T1, T2Y, T3Y, T2J		T8		
								50 or less	Over 50 to 100	101 ≤ 150	151 ≤ 200	201 ≤ 250	251 ≤ 300	Over 300			RD	HD	RD	HD	RD	HD	RD	HD
ø 75	219.4(267.4)	90	120	140	9	55	50	7	14	27	37	47	57	(Stroke/5)	92	52	13.5(37.5)	16.5(40.5)	13.5(37.5)	16.5(40.5)	8.5(32.5)			
ø100	236.4(273.4)	120	150	180	12	55	50	7	14	27	37	47	57	(Stroke/5)	118	64	17.5(36.0)	20.5(39.0)	17.5(36)	20.5(39.0)	12.5(31)			

CAV2(-S)/CAV2-N(S) Series

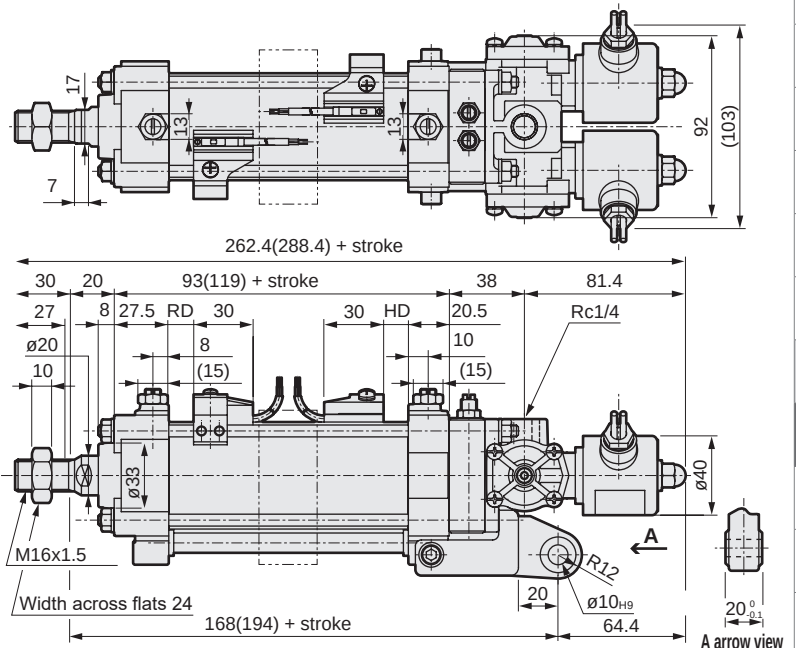
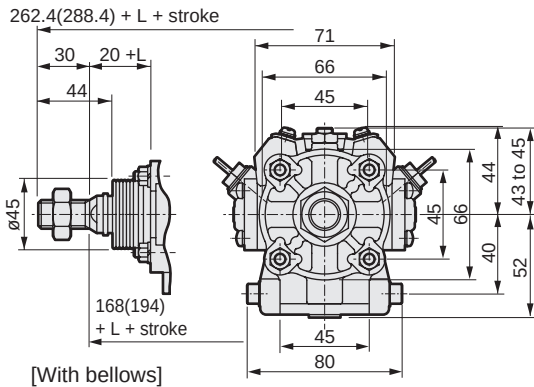
Double acting/double solenoid

Dimensions (Double solenoid CAV2)



● Clevis (CA) ø50

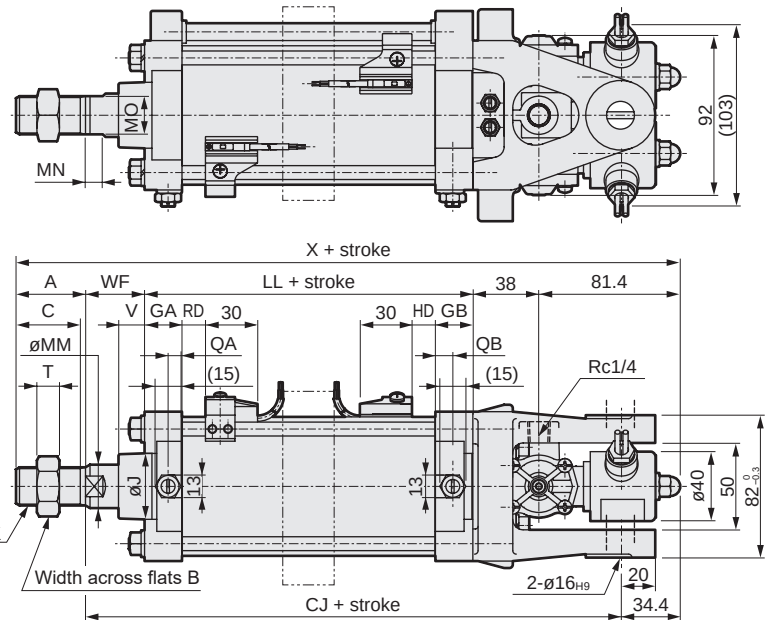
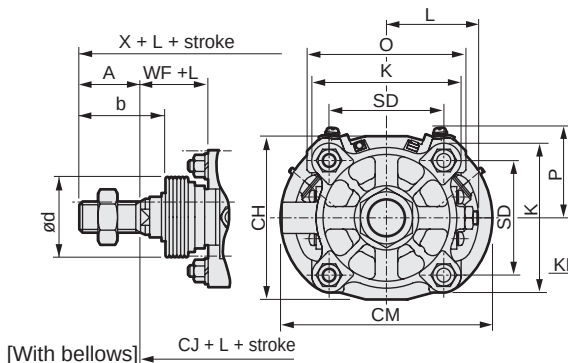
- *1 : Dimensions in () are for the type with cushion (B).
- *2 : For the L dimension, round up below the decimal point.
- *3 : For the oscillating range when combined with clevis bracket (B2), refer to page 740.
- *4 : Dimensions of the short overall length with cushion (-S and -NS) are the same as those of the type without cushion (N) in this figure.
- *5 : For the dimensions of the accessories, refer to page 739.
- *6 : Non-sag block (2-dashed line) will be added depending on the stroke. Refer to page 730 in the catalog.



Code	With bellows							With switch							
	L							T0, T5		T2W, T3W		T1, T2Y, T3Y, T2J		T8	
	50 or less	Over 50 to 100	Over 100 to 150	Over 150 to 200	Over 200 to 250	Over 250 to 300	Over 300	RD	HD	RD	HD	RD	HD	RD	HD
ø50	17	24	37	47	57	67	(Stroke/5)	12.5(25.5)	15.5(28.5)	12.5(25.5)	15.5(28.5)	12.5(25.5)	15.5(28.5)	7(20.5)	10(25.5)

● Eye bracket (CA) ø75/ø100

- *1 : Dimensions in () are for the type with cushion (B).
- *2 : For the L dimension, round up below the decimal point.
- *3 : For the oscillating range when combined with clevis bracket (B2), refer to page 740.
- *4 : Note that the valve cannot be operated manually. Thank you in advance for your understanding.
- *5 : Dimensions of the short overall length with cushion (-S and -NS) are the same as those of the type without cushion (N) in this figure.
- *6 : For the dimensions of the accessories, refer to page 739.
- *7 : Non-sag block (2-dashed line) will be added depending on the stroke. Refer to page 730 in the catalog.



Code	Eye bracket basic dimensions																			Mounting dimensions		
Bore size (mm)	A	B	C	GA	GB	J	K	KK	L	LL	MM	MN	MO	QA	QB	SD	T	V	WF	X	CH	CJ
ø 75	40	32	37	22	22	38	86	M22x1.5	52 to 54	91(139)	25	10	22	8	10	66	13	15	34	284.4(332.4)	94	210(258)
ø100	40	32	37	24.5	24.5	38	109	M22x1.5	60.5 to 62.5	105(142)	25	10	22	10.7	10.7	86.3	13	15	35	299.4(336.4)	109	225(262)
Code	With bellows												With switch									
Bore size (mm)	CM	b	d	L							O	P	T0, T5 T2, T3		T2W, T3W		T1, T2Y, T3Y, T2J		T8			
				50 or less	Over 50 to 100	Over 100 to 150	Over 150 to 200	Over 200 to 250	Over 250 to 300	Over 300			RD	HD	RD	HD	RD	HD	RD	HD		
ø 75	122	55	50	7	14	27	37	47	57	(Stroke/5)	92	52	13.5(37.5)	16.5(40.5)	13.5(37.5)	8.5(32.5)						
ø100	124	55	50	7	14	27	37	47	57	(Stroke/5)	118	64	17.5(36.0)	20.5(39.0)	17.5(36)	12.5(31)						

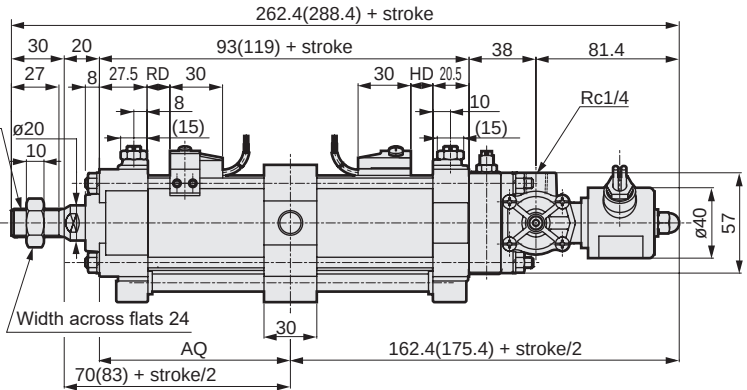
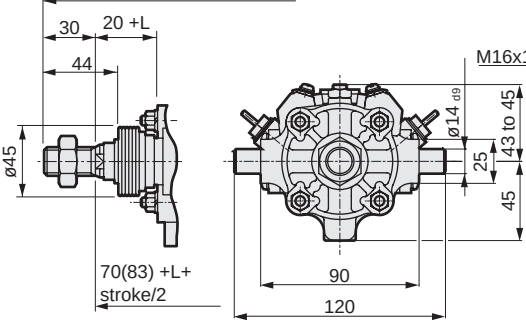
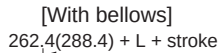
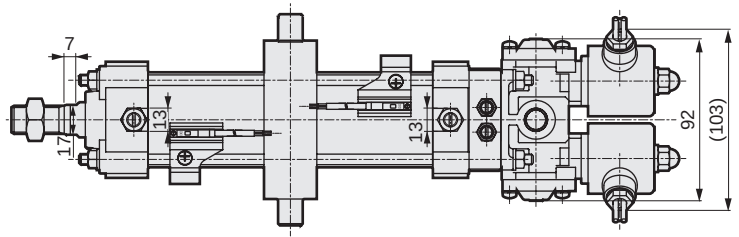
CAV2(-S)/CAV2-N(S) Series

Dimensions (Double solenoid CAV2)



- Intermediate trunnion (shaft) (TC) ø50

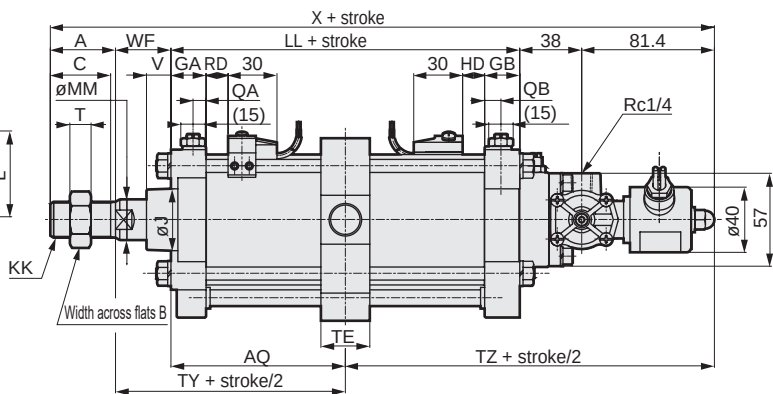
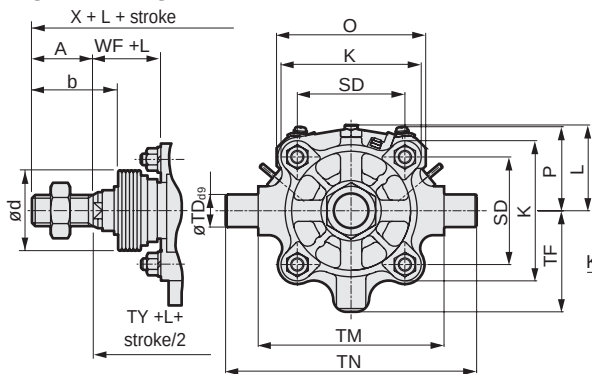
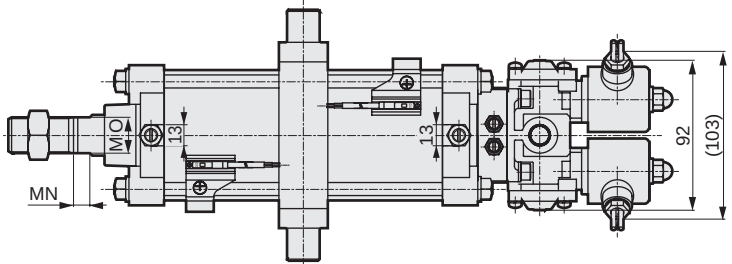
- *1 : Dimensions in () are for the type with cushion (B).
- *2 : For the L dimension, round up below the decimal point.
- *3 : Dimensions of the short overall length with cushion (-S and -NS) are the same as those of the type without cushion (N) in this figure.
- *4: For the dimensions of the accessories, refer to page 739.



Code	Mounting dimensions	With bellows							With switch							
	AQ	L							T0, T5 T2, T3		T2W, T3W		T1, T2Y, T3Y, T2J		T8	
		50 or less	Over 50 to 100	Over 100 to 150	Over 150 to 200	Over 200 to 250	Over 250 to 300	Over 300	RD	HD	RD	HD	RD	HD	RD	HD
Bore size (mm)																
ø50	50 (63) + stroke/2	17	24	37	47	57	67	(Stroke/5)	12.5(25.5)		15.5(28.5)		12.5(25.5)		7(20.5)	

● Intermediate trunnion (shaft) (TC) ø75/ø100

- *1 : Dimensions in () are for the type with cushion (B).
- *2 : For the L dimension, round up below the decimal point.
- *3 : Dimensions of the short overall length with cushion (-S and -NS) are the same as those of the type without cushion (N) in this figure.
- *4 : For the dimensions of the accessories, refer to page 739.

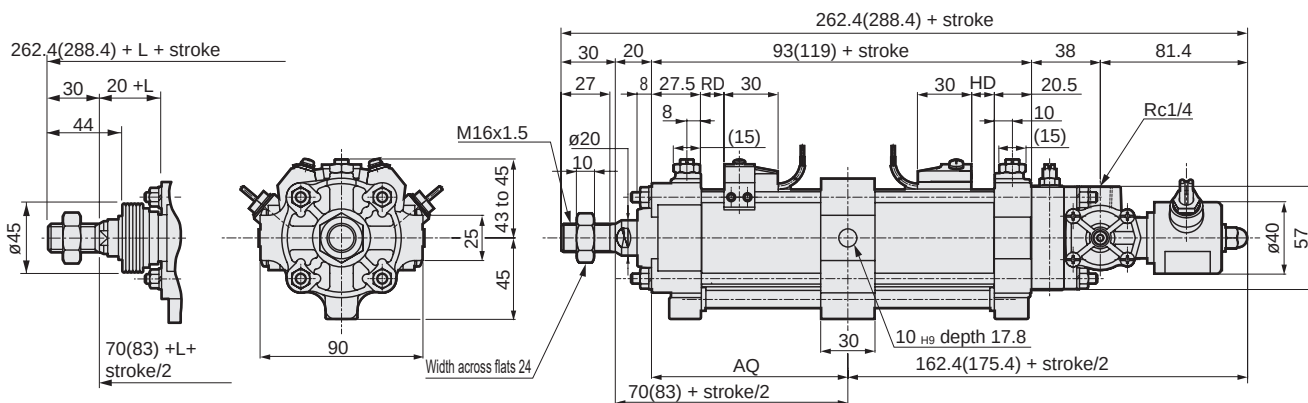


Code		Intermediate trunnion (shaft) Ø75/Ø100 basic dimensions																				Mounting dimensions			
Bore size (mm)		A	B	C	GA	GB	J	K	KK	L	LL	MM	MN	MO	QA	QB	SD	T	V	WF	X	AQ	TD	TE	TF
Ø 75		40	32	37	22	22	38	86	M22x1.5	52 to 54	91(139)	25	10	22	8	10	66	13	15	34	284.4(332.4)	45.5(69.5)+ Stroke 2	20	30	62
Ø100		40	32	37	24.5	24.5	38	109	M22x1.5	60.5 to 62.5	105(142)	25	10	22	10.7	10.7	86.3	13	15	35	299.4(336.4)	52.5(71)+ Stroke 2	35	50	78
Code								With bellows								With switch									
Bore size (mm)		TM	TN	TZ	TY	b	d	L						O	P	T0, T5 T2, T3		T2W T3W		T1, T2Y, T3Y, T2J		T8			
								50 or less	Over 50 to 100	Over 100 to 150	Over 150 to 200	Over 200 to 250	Over 250 to 300			Over 300	RD	HD	RD	HD	RD	HD	RD	HD	
Ø 75		114	154	164.9(188.9)	79.5(103.5)	55	50	7	14	27	37	47	57	(Stroke)5	92	52	13.5(37.5)	16.5(40.5)	13.5(37.5)	8.5(32.5)					
Ø100		135	205	171.9(190.4)	87.5(106)	55	50	7	14	27	37	47	57	(Stroke)5	118	64	17.5(36.0)	20.5(39.0)	17.5(36)	12.5(31)					

Double acting/double solenoid

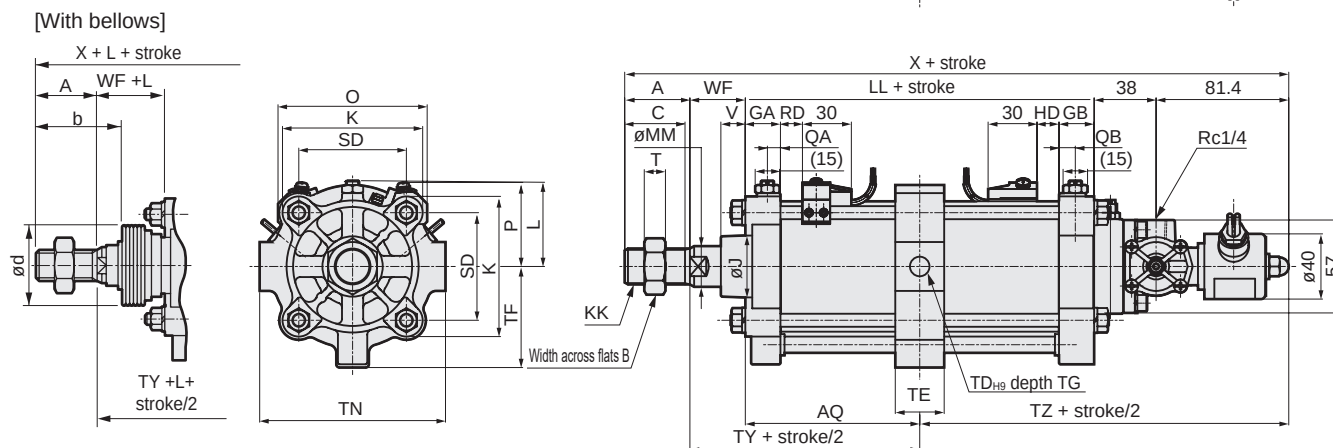
- *1 : Dimensions in () are for the type with cushion (B).
- *2 : For the L dimension, round up below the decimal point.
- *3 : Dimensions of the short overall length with cushion (-S and -NS) are the same as those of the type without cushion (N) in this figure.
- *4 : For the dimensions of the accessories, refer to page 739.

[With bellows]



Code	Mounting dimensions	With bellows							With switch							
	AQ	L							T0, T5 T2, T3		T2W, T3W		T1, T2Y, T3Y, T2J		T8	
50 or less		Over 50 to 100	Over 100 to 150	Over 150 to 200	Over 200 to 250	Over 250 to 300	Over 300	RD	HD	RD	HD	RD	HD	RD	HD	
								Bore size (mm)								
ø50	50 (63) + stroke/2	17	24	37	47	57	67	(Stroke/5)	12.5(25.5)		15.5(28.5)		12.5(25.5)		7(20.5)	

*1 : Dimensions in () are for the type with cushion (B).
 *2 : For the L dimension, round up below the decimal point.
 *3 : Dimensions of the short overall length with cushion (-S and -NS) are the same as those of the type without cushion (N) in this figure.
 *4 : For the dimensions of the accessories, refer to page 739.



Code		Intermediate trunnion (supporting hole type) Ø75/Ø100 basic dimensions																				Mounting dimensions			
Bore size (mm)		A	B	C	GA	GB	J	K	KK	L	LL	MM	MN	MO	QA	QB	SD	T	V	WF	X	AQ	TD	TE	TF
Ø 75		40	32	37	22	22	38	86	M22x1.5	52 to 54	91(139)	25	10	22	8	10	66	13	15	34	284.4(332.4)	45.5(69.5)+ Stroke 2	12	30	62
Ø100		40	32	37	24.5	24.5	38	109	M22x1.5	60.5 to 62.5	105(142)	25	10	22	10.7	10.7	86.3	13	15	35	299.4(336.4)	52.5(71)+ Stroke 2	16	40	78
Code		Mounting dimensions						With bellows										With switch							
Bore size (mm)		TG	TN	TZ	TY	b	d	L							O	P	T0, T5 T2, T3		T2W, T3W		T1, T2Y, T3Y, T2J		T8		
								50 or less	Over 50 to 100	Over 100 to 150	Over 150 to 200	Over 200 to 250	Over 250 to 300	Over 300			RD	HD	RD	HD	RD	HD			
Ø 75		16.8	114	164.9(188.9)	79.5(103.5)	55	50	7	14	27	37	47	57	(Stroke)5	92	52	13.5(37.5)	16.5(40.5)	13.5(37.5)	8.5(32.5)					
Ø100		18.6	144	171.9(190.4)	87.5(106)	55	50	7	14	27	37	47	57	(Stroke)5	118	64	17.5(36.0)	20.5(39.0)	17.5(36)	12.5(31)					

SCP*3
CMK2
CMA2
SCM
SCG
SCA2
SCS2
CKV2
CAV2/ COVPIN2
SSD2
SSG
SSD
CAT
MDC2
MVC
SMG
MSD/ MSDG
FC*
STK
SRL3
SRG3
SRM3
SRT3
MRL2
MRG2
SM-25
ShkAbs
FJ
FK
Spd Contr
Ending

COV_N^P2(-S)/COV_N^P2-N(S) Series



Dimensions (Single solenoid COV_N^P 2)

- Axial foot (LB) ø50

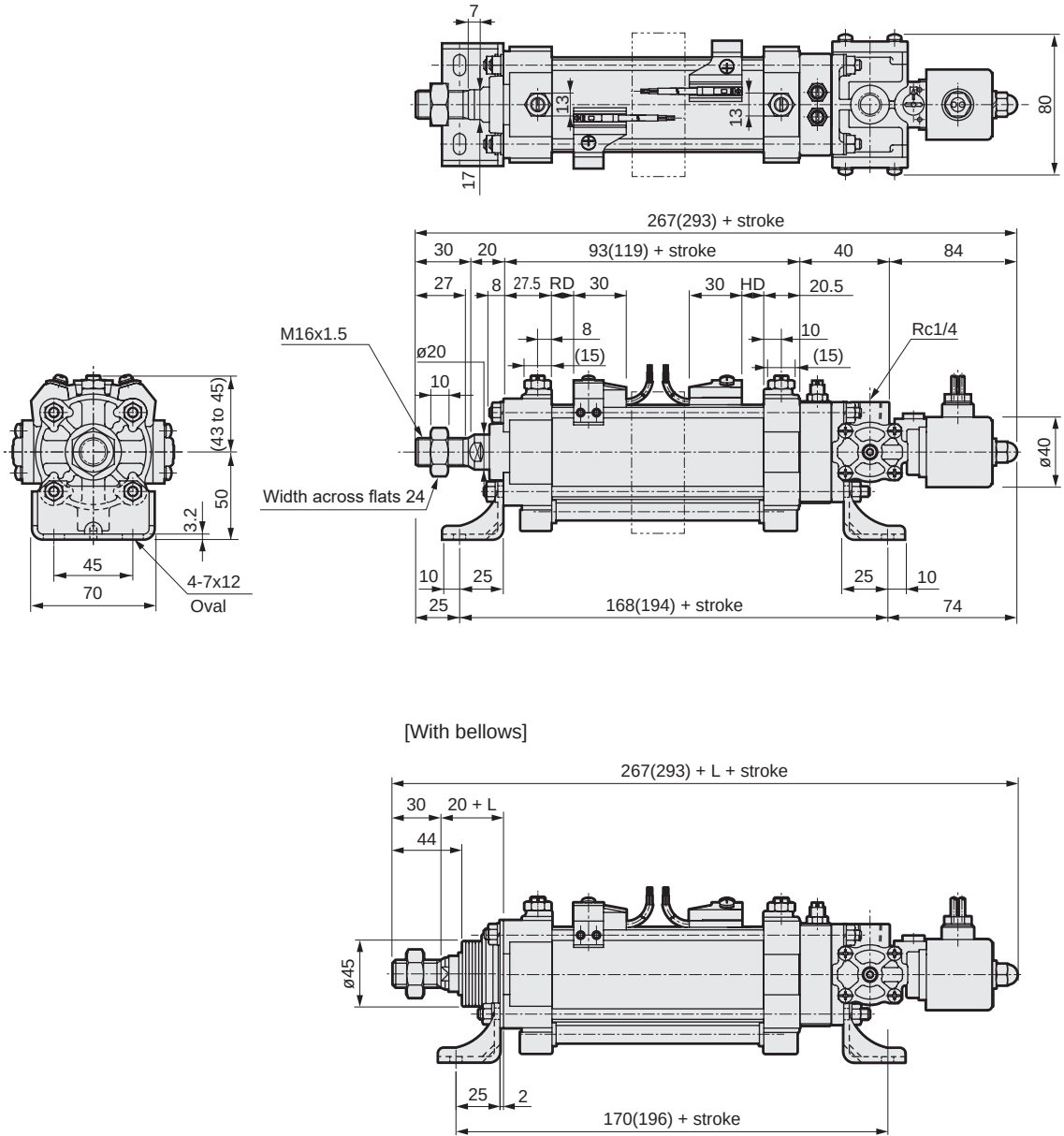
*1 : Dimensions in () are for the type with cushion (B).

*2 : For the L dimension, round up below the decimal point.

*3 : Dimensions of the short overall length with cushion (-S and -NS) are the same as those of the type without cushion (N) in this figure.

*4: For the dimensions of the accessories, refer to page 739.

*5:Non-sag block (2-dashed line) will be added depending on the stroke. Refer to page 730.



Code Bore size (mm)	With bellows							With switch							
	L							T0, T5 T2, T3		T2W, T3W		T1, T2Y, T3Y, T2J		T8	
	50 or less	Over 50 to 100	Over 100 to 150	Over 150 to 200	Over 200 to 250	Over 250 to 300	Over 300								
								RD	HD	RD	HD	RD	HD	RD	HD
ø50	17	24	37	47	57	67	(Stroke/5)	12.5(25.5)		15.5(28.5)		12.5(25.5)		7(20.5)	

COV_N^P 2(-S)/COV_N^P 2-N(S) Series

Double acting/single solenoid

Dimensions (Single solenoid COV_N^P 2)



● Axial foot (LB) ø75/ø100

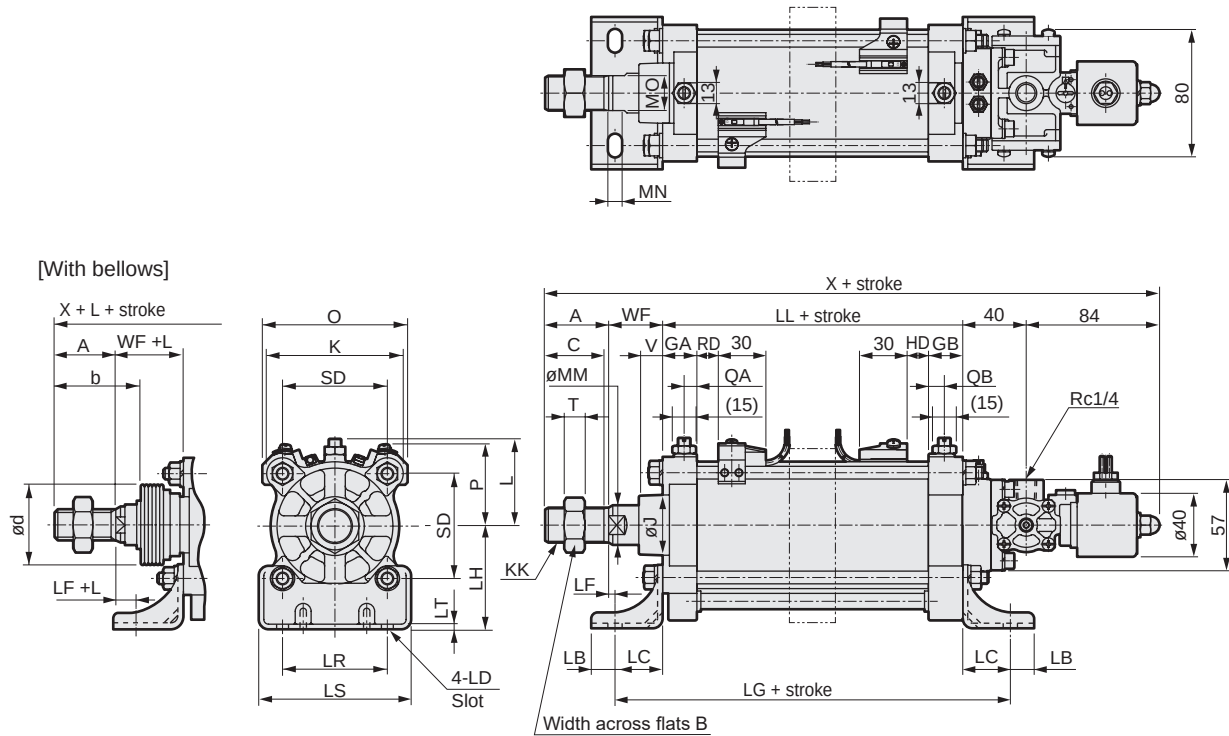
*1 : Dimensions in () are for the type with cushion (B).

*2 : For the L dimension, round up below the decimal point.

*3 : Dimensions of the short overall length with cushion (-S and -NS) are the same as those of the type without cushion (N) in this figure.

*4 : For the dimensions of the accessories, refer to page 739.

*5 : Non-sag block (2-dashed line) will be added depending on the stroke. Refer to page 730.



Code		Axial foot ø75/ø100 basic dimensions																			Mounting dimensions						
Bore size (mm)		A	B	C	GA	GB	J	K	KK	L	LL	MM	MN	MO	QA	QB	SD	T	V	WF	X	LB	LC				
ø 75		40	32	37	22	22	38	86	M22x1.5	52 to 54	91(139)	25	10	22	8	10	66	13	15	34	289(337)	15	30				
ø100		40	32	37	24.5	24.5	38	109	M22x1.5	60.5 to 62.5	105(142)	25	10	22	10.7	10.7	86.3	13	15	35	304(341)	15	30				
Code		Mounting dimensions							With bellows								With switch										
Bore size (mm)	LD	LF	LG	LH	LR	LS	LT	b	d	L							O	P	T0, T5 T2, T3		T2W, T3W		T1, T2Y, T3Y, T2J		T8		
										50 or less	51 ≤ 100	101 ≤ 150	151 ≤ 200	201 ≤ 250	251 ≤ 300	Over 300			RD	HD	RD	HD	RD	HD		RD	HD
ø 75		9x15	4	151(199)	65	66	96	3.2	55	50	7	14	27	37	47	57	(Stroke/5)	92	52	13.5(37.5)	16.5(40.5)	13.5(37.5)	8.5(32.5)				
ø100		11x20	5	165(202)	85	85	120	3.2	55	50	7	14	27	37	47	57	(Stroke/5)	118	64	17.5(36.0)	20.5(39.0)	17.5(36)	12.5(31)				

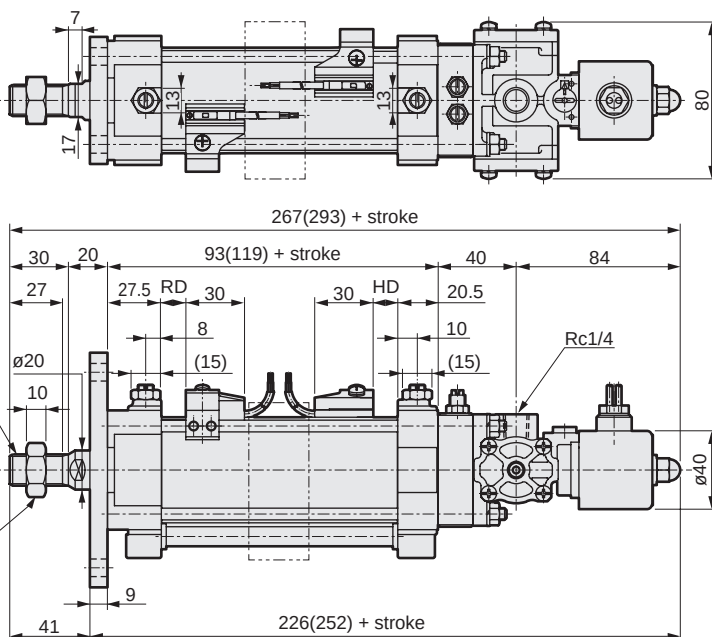
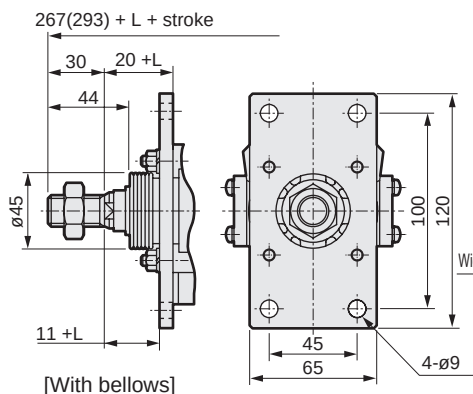
COV_N2(-S)/COV_N2-N(S) Series



Dimensions (Single solenoid COV_N2)

● Rod side flange (FA) ø50

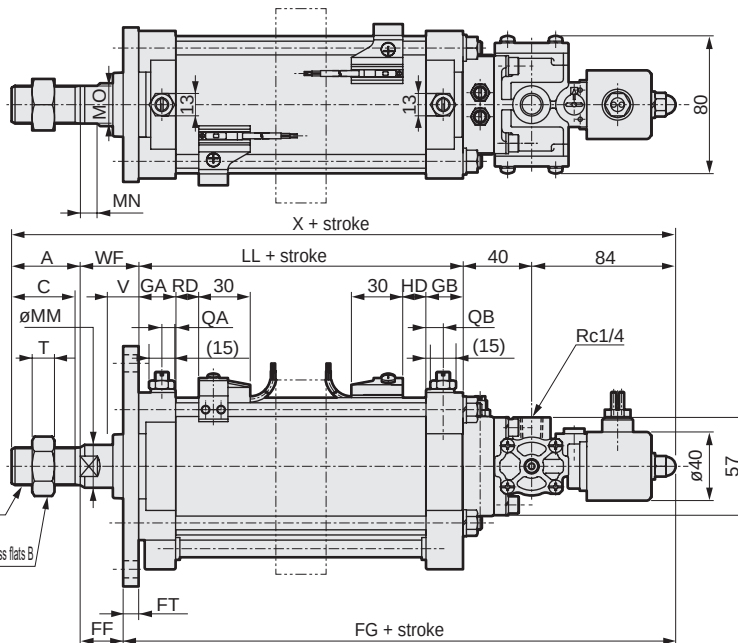
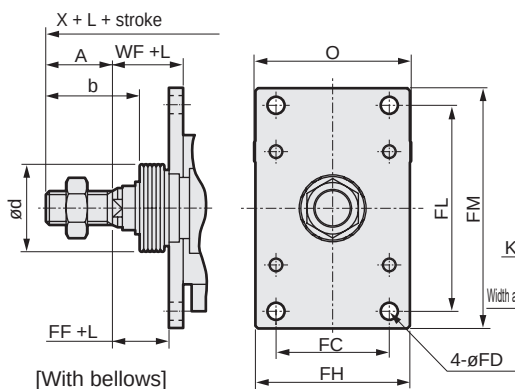
- *1 : Dimensions in () are for the type with cushion (B).
 *2 : For the L dimension, round up below the decimal point.
 *3 : Dimensions of the short overall length with cushion (-S and -NS) are the same as those of the type without cushion (N) in this figure.
 *4 : In the type with bellows, the bellows installation surface and the hexagon nut (M6) will protrude from the flange installation surface. Therefore, provide depth of ø77 or more and clearance of 11 or more.
 *5 : For the dimensions of the accessories, refer to page 739.
 *6 : Non-sag block (2-dashed line) will be added depending on the stroke. Refer to page 730.



Code	With bellows							With switch							
	L							T0, T5 T2, T3		T2W, T3W		T1, T2Y, T3Y, T2J		T8	
	Bore size (mm)	50 or less	Over 50 to 100	Over 100 to 150	Over 150 to 200	Over 200 to 250	Over 250 to 300								
RD								HD	RD	HD	RD	HD	RD	HD	
ø50	17	24	37	47	57	67	(Stroke/5)	12.5(25.5)	15.5(28.5)	12.5(25.5)	7(20.5)				

● Rod side flange (FA) ø75/ø100

- *1 : Dimensions in () are for the type with cushion (B).
 *2 : For the L dimension, round up below the decimal point.
 *3 : Dimensions of the short overall length with cushion (-S and -NS) are the same as those of the type without cushion (N) in this figure.
 *4 : For the dimensions of the accessories, refer to page 739.
 *5 : Non-sag block (2-dashed line) will be added depending on the stroke. Refer to page 730.



Code	Rod side flange ø75/ø100 basic dimensions																	Mounting dimensions			
Bore size (mm)	A	B	C	GA	GB	J	KK	LL	MM	MN	MO	QA	QB	T	V	WF	X	FC	FD	FF	FG
ø 75	40	32	37	22	22	38	M22x1.5	91(139)	25	10	22	8	10	13	15	34	289(337)	66	10	25	224(272)
ø100	40	32	37	24.5	24.5	38	M22x1.5	105(142)	25	10	22	10.7	10.7	13	15	35	304(341)	85	12	23	241(278)
Code					With bellows									With switch							
Bore size (mm)	FH	FL	FM	FT	b	d	L							O	P	T0, T5 T2, T3		T2W, T3W	T1, T2Y, T3Y, T2J		T8
							50 or less	Over 50 to 100	Over 100 to 150	Over 150 to 200	Over 200 to 250	Over 250 to 300	Over 300			RD	HD		RD	HD	
ø 75	90	120	140	9	55	50	7	14	27	37	47	57	(Stroke/5)	92	52	13.5(37.5)	16.5(40.5)	13.5(37.5)	8.5(32.5)		
ø100	120	150	180	12	55	50	7	14	27	37	47	57	(Stroke/5)	118	64	17.5(36.0)	20.5(39.0)	17.5(36)	12.5(31)		

Double acting/single solenoid

[illegible][illegible]

Code	Eye bracket ø75/ø100 basic dimensions																			Mounting dimensions			
Bore size (mm)	A	B	C	GA	GB	J	K	KK	L	LL	MM	MN	MO	QA	QB	SD	T	V	WF	X	CH	CJ	CM
ø 75	40	32	37	22	22	38	86	M22x1.5	52 to 54	91(139)	25	10	22	8	10	66	13	15	34	289(337)	94	210(258)	122
ø100	40	32	37	24.5	24.5	38	109	M22x1.5	60.5 to 62.5	105(142)	25	10	22	10.7	10.7	86.3	13	15	35	304(341)	109	225(262)	124
Code	With bellows													With switch									
Bore size (mm)	b	d	L							O	P	T0, T5 T2, T3		T2W, T3W		T1, T2Y, T3Y, T2J		T8					
			50 or less	Over 50 to 100	Over 100 to 150	Over 150 to 200	Over 200 to 250	Over 250 to 300	RD			HD	RD	HD	RD	HD	RD	HD					
ø 75	55	50	7	14	27	37	47	57	(Stroke)5	92	52	13.5(37.5)		16.5(40.5)		13.5(37.5)		8.5(32.5)					
ø100	55	50	7	14	27	37	47	57	(Stroke)5	118	64	17.5(36.0)		20.5(39.0)		17.5(36)		12.5(31)					

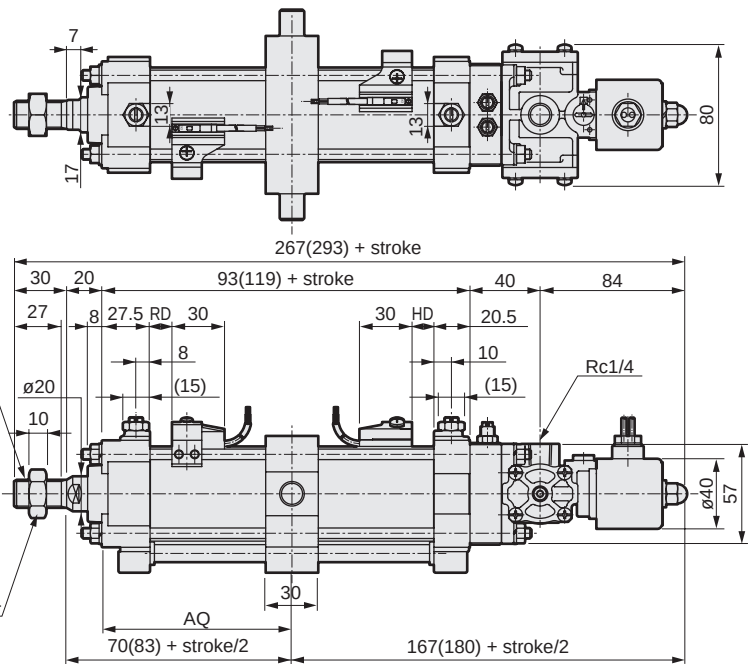
COV_N2(-S)/COV_N2-N(S) Series



Dimensions (Single solenoid COV_N2)

● Intermediate trunnion (shaft) (TC) ø50

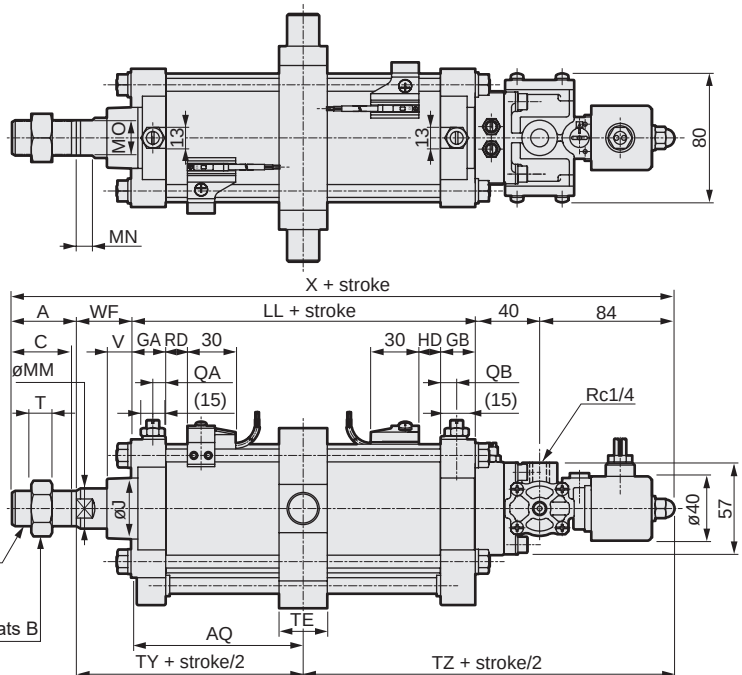
- *1 : Dimensions in () are for the type with cushion (B).
 *2 : For the L dimension, round up below the decimal point.
 *3 : Dimensions of the short overall length with cushion (-S and -NS) are the same as those of the type without cushion (N) in this figure.
 *4 : For the dimensions of the accessories, refer to page 739.



Code	Mounting dimensions	With bellows							With switch							
Bore size (mm)	AQ	L							T0, T5 T2, T3		T2W, T3W		T1, T2Y, T3Y, T2J		T8	
		50 or less	Over 50 to 100	Over 100 to 150	Over 150 to 200	Over 200 to 250	Over 250 to 300	Over 300	RD	HD	RD	HD	RD	HD	RD	HD
ø50	50(63) + stroke/2	17	24	37	47	57	67	(Stroke/5)	12.5(25.5)		15.5(28.5)		12.5(25.5)		7(20.5)	

● Intermediate trunnion (shaft) (TC) ø75/ø100

- *1 : Dimensions in () are for the type with cushion (B).
 *2 : For the L dimension, round up below the decimal point.
 *3 : Dimensions of the short overall length with cushion (-S and -NS) are the same as those of the type without cushion (N) in this figure.
 *4 : For the dimensions of the accessories, refer to page 739.



Code	Intermediate trunnion (shaft) ø75/ø100 basic dimensions																				Mounting dimensions			
Bore size (mm)	A	B	C	GA	GB	J	K	KK	L	LL	MM	MN	MO	QA	QB	SD	T	V	WF	X	AQ	TD	TE	TF
ø 75	40	32	37	22	22	38	86	M22x1.5	52 to 54	91(139)	25	10	22	8	10	66	13	15	34	289(337)	45.5(69.5)+ $\frac{Stroke}{2}$	20	30	62
ø100	40	32	37	24.5	24.5	38	109	M22x1.5	60.5 to 62.5	105(142)	25	10	22	10.7	10.7	86.3	13	15	35	304(341)	52.5(71)+ $\frac{Stroke}{2}$	35	50	78
Code	Mounting dimensions						With bellows								With switch									
Bore size (mm)	TM	TN	TZ	TY	b	d	L						O	P	T0, T5		T2W T3W	T1, T2Y,		T8				
							50 or less	Over 50 to 100	Over 100 to 150	Over 150 to 200	Over 200 to 250	Over 250 to 300			T2, T3	T3Y, T2J								
																	RD	HD	RD	HD	RD	HD	RD	HD
ø 75	114	154	169.5(193.5)	79.5(103.5)	55	50	7	14	27	37	47	57	(Stroke/5)	92	52	13.5(37.5)	16.5(40.5)	13.5(37.5)	8.5(32.5)					
ø100	135	205	176.5(195)	87.5(106)	55	50	7	14	27	37	47	57	(Stroke/5)	118	64	17.5(36.0)	20.5(39.0)	17.5(36)	12.5(31)					

Double acting/single solenoid

-
- Technical drawing of a hydraulic cylinder showing front and side views with dimensions.
- Front View Dimensions:**
- Stroke: 267(293) + stroke
 - Mounting bracket width: 7
 - Mounting bracket hole diameter: 17
 - Mounting bracket hole offset: 3
 - Mounting bracket hole offset: 13
 - Mounting bracket hole diameter: 80
- Side View Dimensions:**
- Stroke: 93 + stroke
 - Mounting bracket width: 30
 - Mounting bracket hole diameter: 27
 - Mounting bracket hole offset: 8
 - Mounting bracket hole offset: 27.5
 - Mounting bracket hole offset: RD
 - Mounting bracket hole offset: 30
 - Mounting bracket hole offset: 8
 - Mounting bracket hole offset: (15)
 - Mounting bracket hole offset: 30
 - Mounting bracket hole offset: HD
 - Mounting bracket hole offset: 20.5
 - Mounting bracket hole offset: 10
 - Mounting bracket hole offset: (15)
 - Mounting bracket hole offset: Rc1/4
 - Mounting bracket hole offset: 40
 - Mounting bracket hole offset: 84
 - Mounting bracket hole offset: 70 + stroke/2
 - Mounting bracket hole offset: 167(180) + stroke/2
 - Mounting bracket hole offset: 10 H9 depth 17.8
 - Mounting bracket hole offset: 30
 - Mounting bracket hole offset: 57
 - Mounting bracket hole offset: 40

Code		Intermediate trunnion (shaft) Ø75/Ø100 basic dimensions																			Mounting dimensions			
Bore size (mm)	A	B	C	GA	GB	J	K	KK	L	LL	MM	MN	MO	QA	QB	SD	T	V	WF	X	AQ	TD	TE	TF
	φ 75	40	32	37	22	22	38	86	M 22 x 1.5	52 to 54	91 (139)	25	10	22	8	10	66	13	15	34	289 (337)	45.5 (69.5) + $\frac{\text{Stroke}}{2}$	12	30
Ø100	40	32	37	24.5	24.5	38	109	M 22 x 1.5	60.5 to 62.5	105 (142)	25	10	22	10.7	10.7	86.3	13	15	35	304 (341)	52.5 (71) + $\frac{\text{Stroke}}{2}$	16	40	78
Code								With bellows									With switch							
Bore size (mm)	TG	TN	TZ	TY	b	d	L							O	P	T0, T5 T2, T3		T2W, T3W		T1, T2Y, T3Y, T2J		T8		
							50 or less	Over 50 to 100	Over 100 to 150	Over 150 to 200	Over 200 to 250	Over 250 to 300	Over 300			RD	HD	RD	HD	RD	HD			
φ 75	16.8	114	169.5 (193.5)	79.5 (103.5)	55	50	7	14	27	37	47	57	(Stroke/5)	92	52	13.5 (37.5)	16.5 (40.5)	13.5 (37.5)	8.5 (32.5)					
Ø100	18.6	144	176.5 (195)	87.5 (106)	55	50	7	14	27	37	47	57	(Stroke/5)	118	64	17.5 (36.0)	20.5 (39.0)	17.5 (36)	12.5 (31)					

COV^P_N2(-S)/COV^P_N2-N(S) Series

About non-sag block

Depending on its stroke, a non-sag block will be added to the middle part of the cylinder.

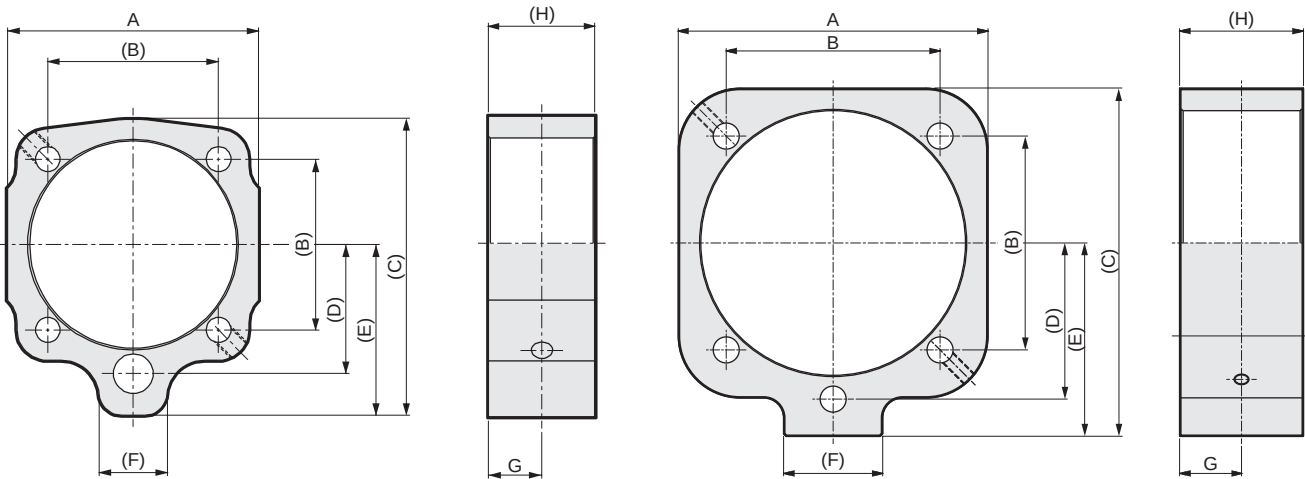
Number of non-sag blocks depending on stroke

Tube size (mm)	Stroke (mm)	Number of non-sag blocks
ø50	501 to 1000	1
ø75	501 to 1000	1
ø100	501 to 1000	1

The dimensions of non-sag blocks are as shown in the figure below.
When attaching the cylinder, take into account the dimensions of the non-sag blocks.

● ø50,ø75

● ø100



Tube size (mm)	Non-sag block dimensions							
	A	B	C	D	E	F	G	H
ø50	66	45	78	34	45	18	15	30
ø75	100	66	112	48	62	22	15	30
ø100	125	86	140.5	63	78	40	25	50

MEMO

SCP*3

CMK2

CMA2

SCM

SCG

SCA2

SCS2

CKV2

CAV2/
COVPIN2

SSD2

SSG

SSD

CAT

MDC2

MVC

SMG

MSD/
MSDG

FC*

STK

SRL3

SRG3

SRM3

SRT3

MRL2

MRG2

SM-25

ShkAbs

FJ

FK

Spd
Contr

Ending

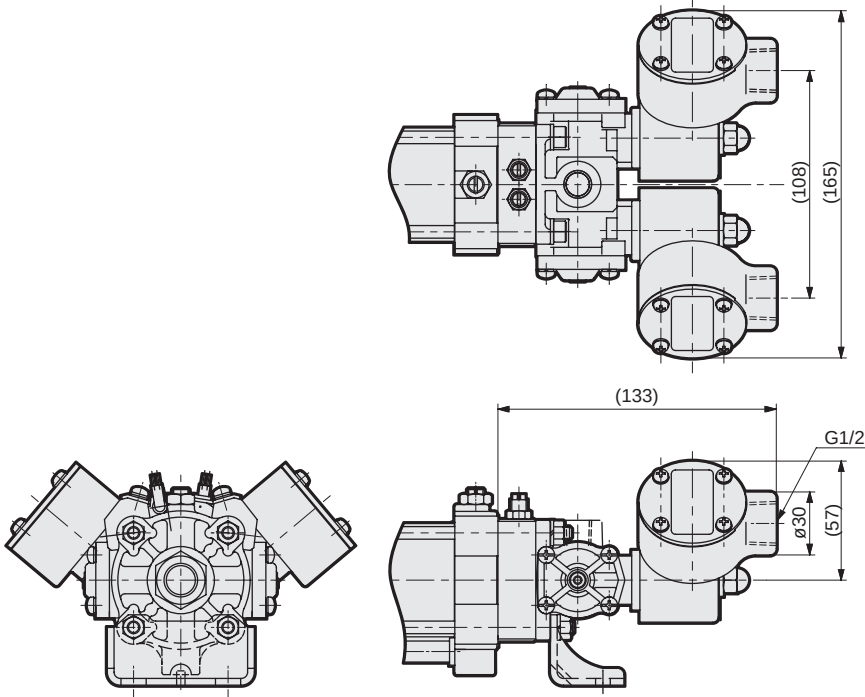
CAV2(-S)/CAV2-N(S) Series

SCP*3
CMK2
CMA2
SCM
SCG
SCA2
SCS2
CKV2
CAV2/ COVPIN2
SSD2
SSG
SSD
CAT
MDC2
MVC
SMG
MSD/ MSDG
FC*
STK
SRL3
SRG3
SRM3
SRT3
MRL2
MRG2
SM-25
ShkAbs
FJ
FK
Spd Contr
Ending

Dimensions with options (TB1)

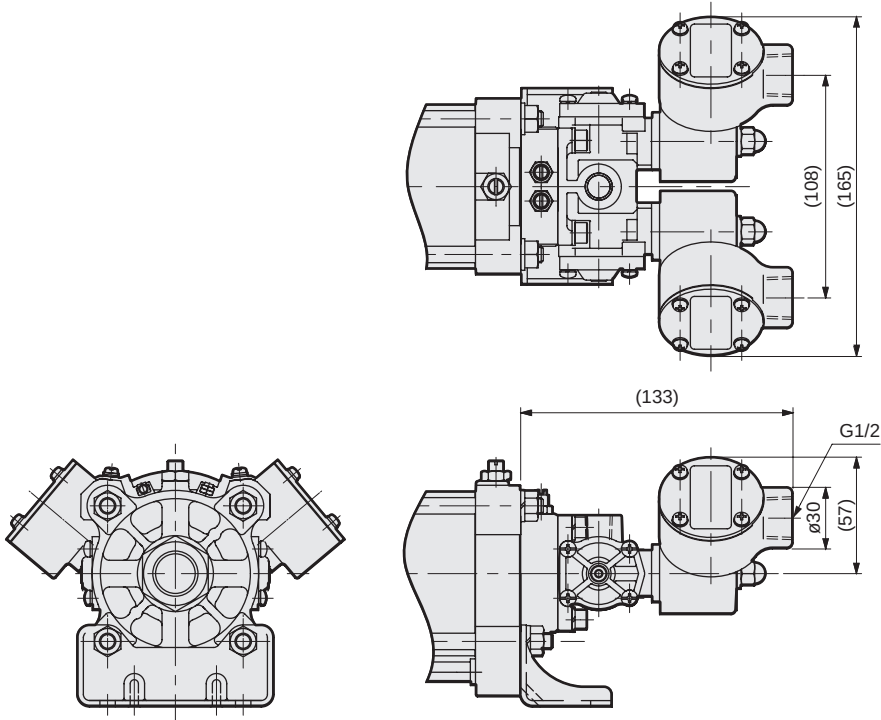
- CAV2-LB, CAV2-N-LB (double solenoid)
Axial foot (LB) with round terminal box (TB1) ø50

*1:For the dimensions of the accessories, refer to page 739.
*2:Dimensions with terminal box of the rod side flange and intermediate trunnion are the same as those of the axial foot.
For the mounting method, refer to page 718.



- CAV2-LB, CAV2-N-LB (double solenoid)
Axial foot (LB) with round terminal box (TB1) ø75/ø100

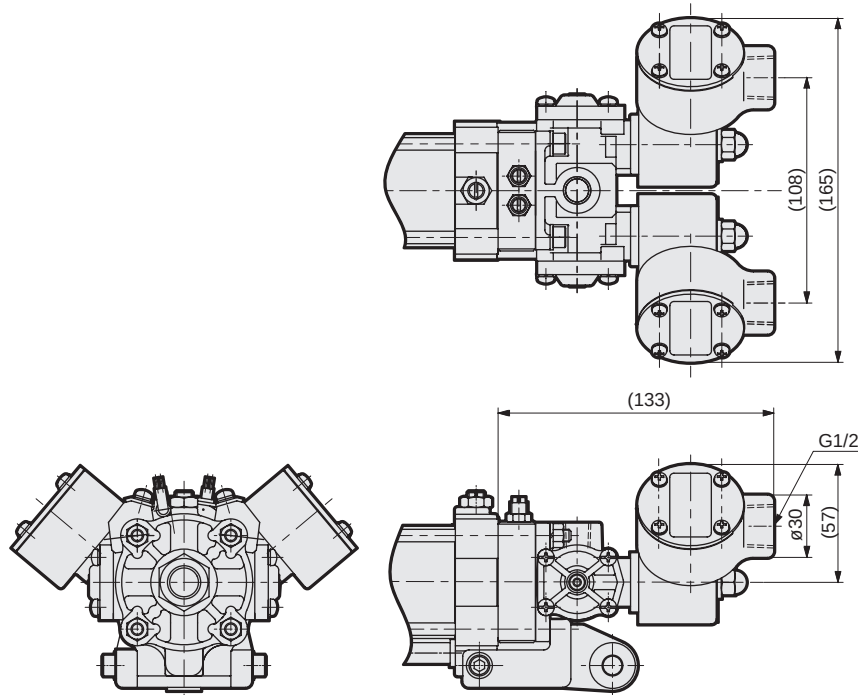
*1:For the dimensions of the accessories, refer to page 739.
*2:Dimensions with terminal box of the rod side flange and intermediate trunnion are the same as those of the axial foot.
For the mounting method, refer to page 719.



Dimensions with options (TB1)

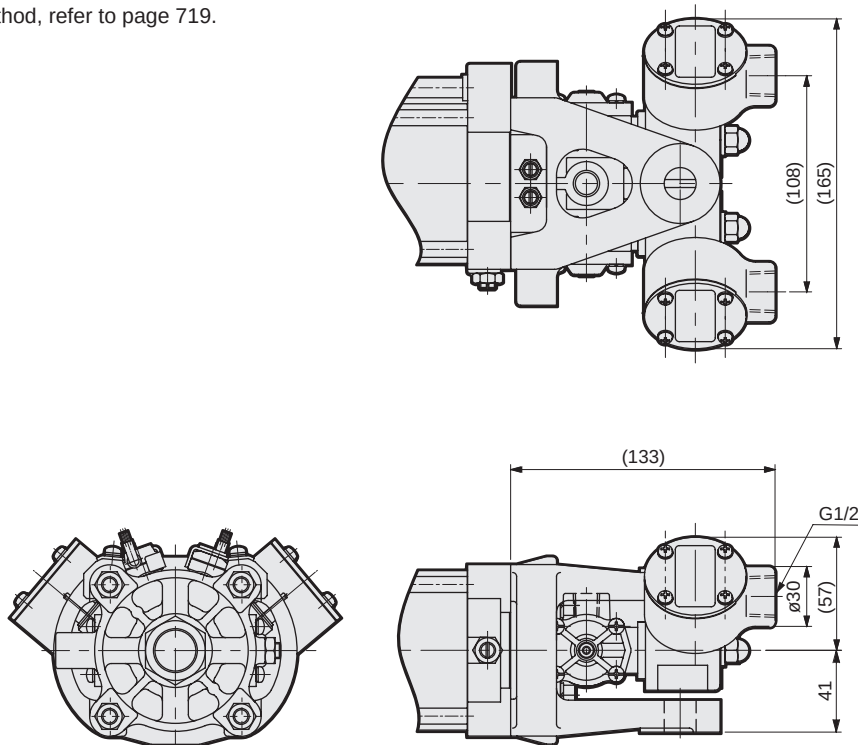
- CAV2-CA, CAV2-N-CA (double solenoid)
Clevis (CA) with round terminal box (TB1) $\varnothing 50$

*1 : For the dimensions of the accessories, refer to page 739.
*2 : Dimensions with terminal box of the rod side flange and intermediate trunnion are the same as those of the axial foot.
For the mounting method, refer to page 718.



- CAV2-CA, CAV2-N-CA (double solenoid)
Clevis (CA) with round terminal box (TB1) $\varnothing 75/\varnothing 100$

*1:For the dimensions of the accessories, refer to page 739.
*2:Dimensions with terminal box of the rod side flange and intermediate trunnion are the same as those of the axial foot.
For the mounting method, refer to page 719.



SCP*3

CMK2

CMA2

SCM

SCG

SCA2

SCS2

CKV2

CAV2/
COVP/IN2

SSD2

SSG

SSD

CAT

MDC2

MVC

SMG

MSD/
MSDG

FC*

STK

SRL3

SRG3

SRM3

SRT3

MRL2

MRG2

SM-25

ShkAbs

FJ

FK

Spd
Contr

Ending

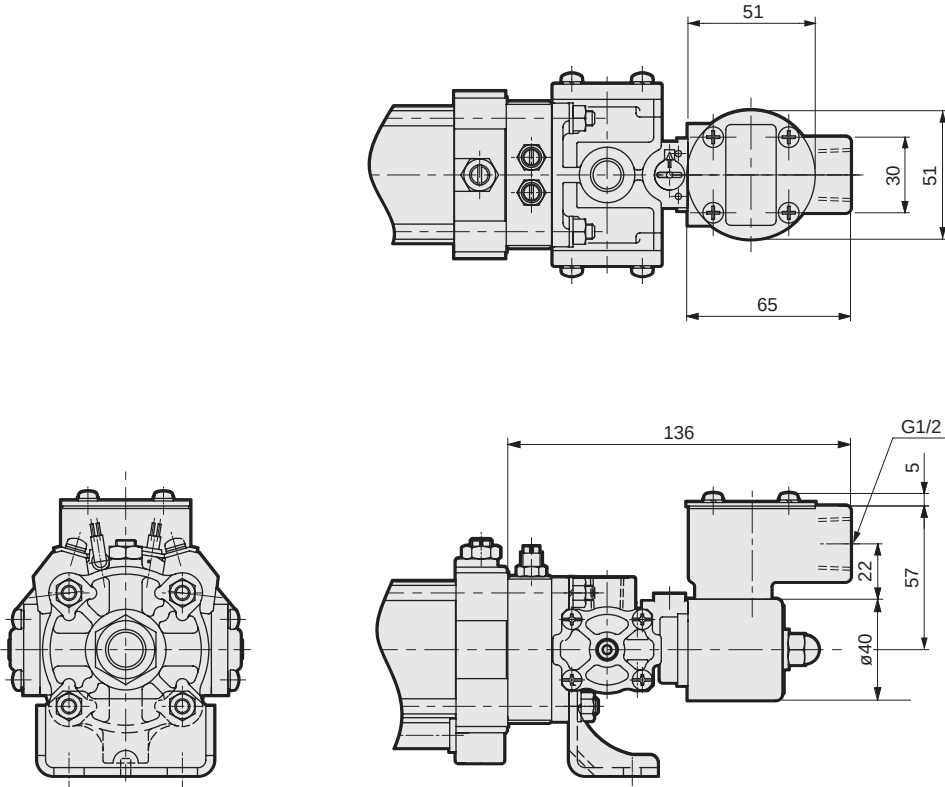
COV^P_N2(-S)/COV^P_N2-N(S) Series

SCP*3
CMK2
CMA2
SCM
SCG
SCA2
SCS2
CKV2
CAV2/ COVPIN2
SSD2
SSG
SSD
CAT
MDC2
MVC
SMG
MSD/ MSDG
FC*
STK
SRL3
SRG3
SRM3
SRT3
MRL2
MRG2
SM-25
ShkAbs
FJ
FK
Spd Contr
Ending

Dimensions with options (TB1)

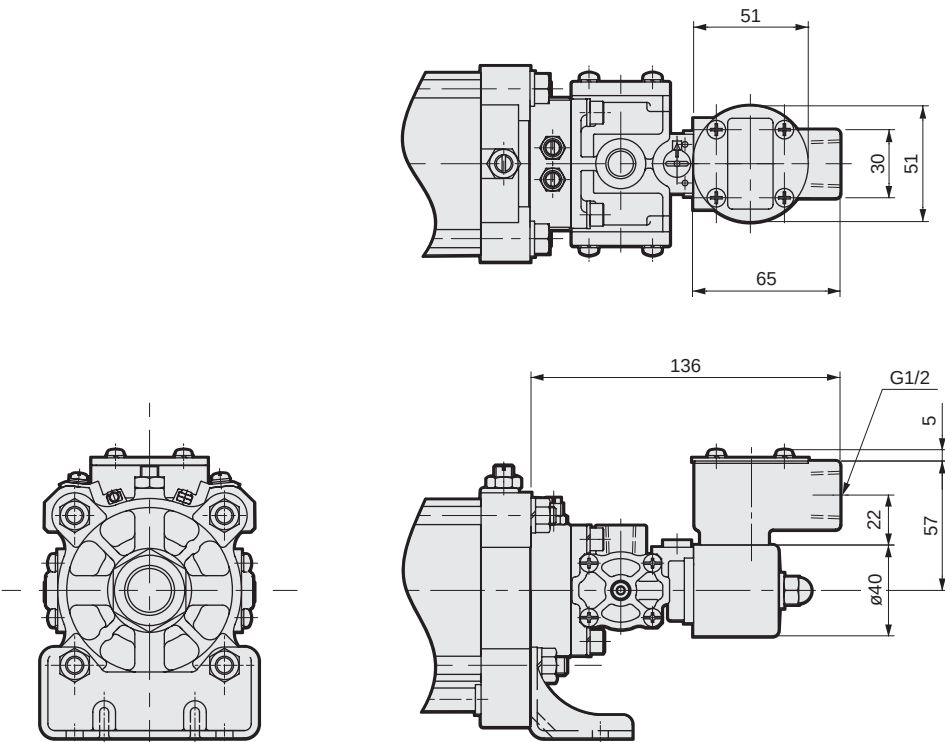
- COV^P_N2-LB/COV^P_N2-N-LB (single solenoid)
Axial foot (LB) with round terminal box (TB1) ø50

*1:For the dimensions of the accessories, refer to page 739.
*2:Dimensions with terminal box of the rod side flange and intermediate trunnion are the same as those of the axial foot.
For the mounting method, refer to page 724.



- COV^P_N2-LB/COV^P_N2-N-LB (single solenoid)
Axial foot (LB) with round terminal box (TB1) ø75/ø100

*1:For the dimensions of the accessories, refer to page 739.
*2:Dimensions with terminal box of the rod side flange and intermediate trunnion are the same as those of the axial foot.
For the mounting method, refer to page 725.



COV_N^P2(-S)/COV_N^P2-N(S) Series

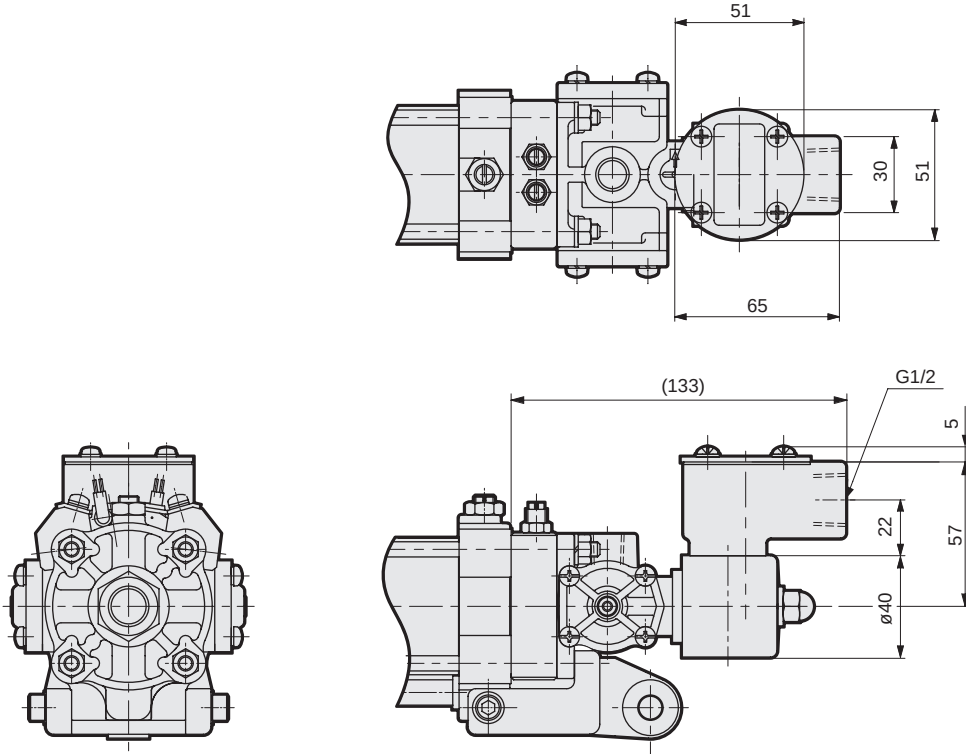
Dimensions with options

Dimensions with options (TB1)

- $\text{COV}_N^P \text{ 2-CA} / \text{COV}_N^P \text{ 2-N-CA}$ (single solenoid)
Clevis (CA) with round terminal box (TB1) $\varnothing 50$

*1: For the dimensions of the accessories, refer to page 739.

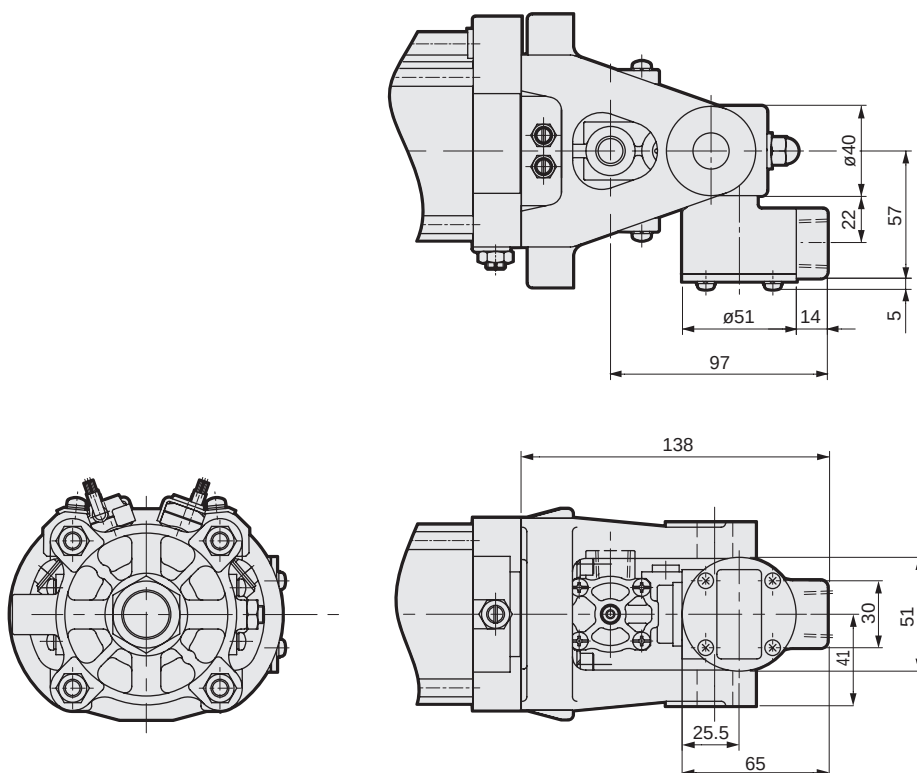
*2: Dimensions with terminal box of the rod side flange and intermediate trunnion are the same as those of the axial foot.
For the mounting method, refer to page 724.



- $\text{COV}_N^P \text{ 2-CA} / \text{COV}_N^P \text{ 2-N-CA}$ (single solenoid)
Clevis (CA) with round terminal box (TB1) $\varnothing 75/\varnothing 100$

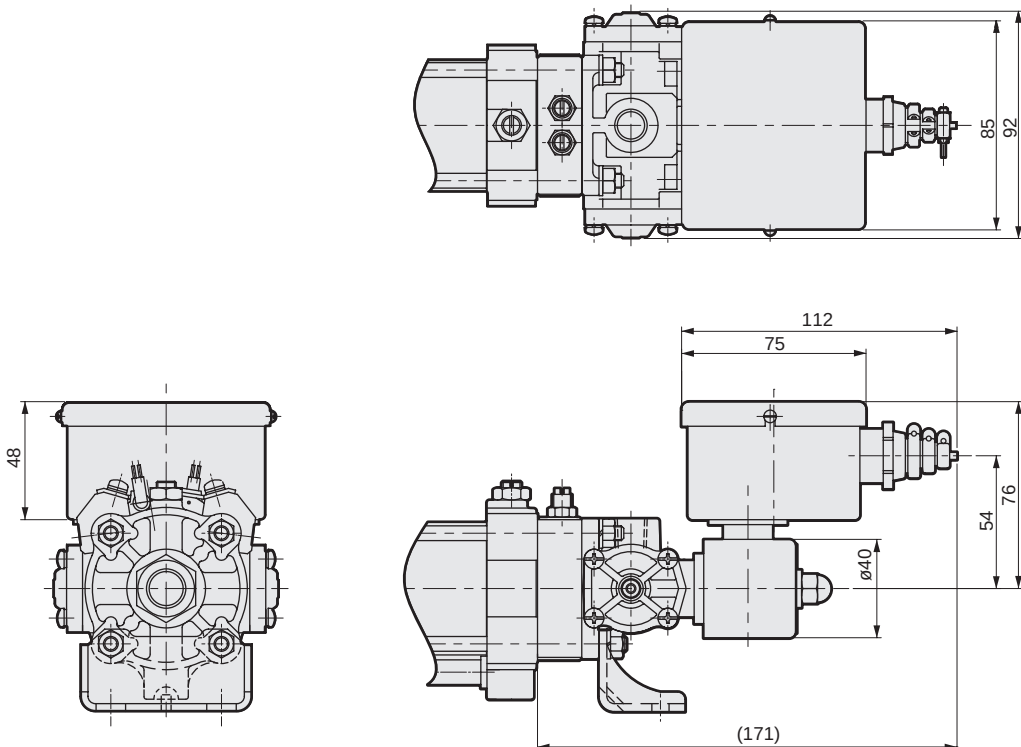
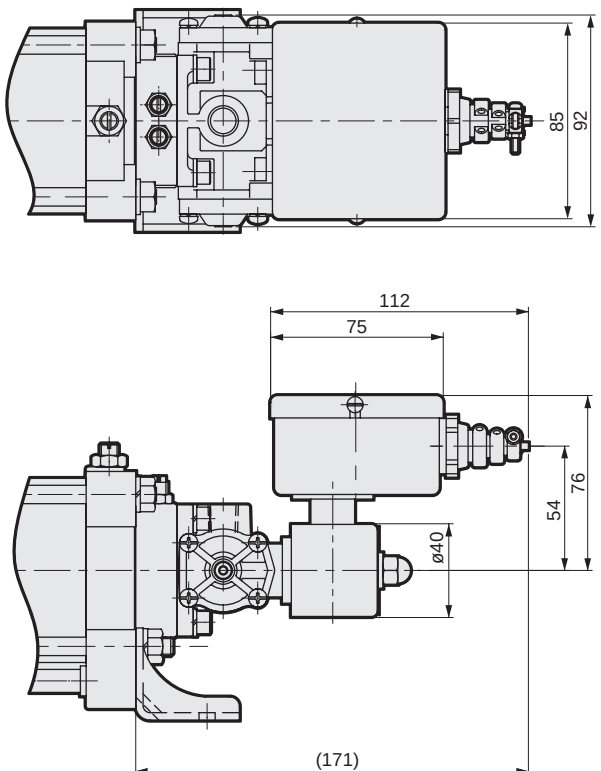
*1: For the dimensions of the accessories, refer to page 739.

*2: Dimensions with terminal box of the rod side flange and intermediate trunnion are the same as those of the axial foot.
For the mounting method, refer to page 725.



SCP*3
CMK2
CMA2
SCM
SCG
SCA2
SCS2
CKV2
CAV2/ COV/IN2
SSD2
SSG
SSD
CAT
MDC2
MVC
SMG
MSD/ MSDG
FC*
STK
SRL3
SRG3
SRM3
SRT3
MRL2
MRG2
SM-25
ShkAbs
FJ
FK
Spd Contr
Ending

CAV2(-S)/CAV2-N(S) Series

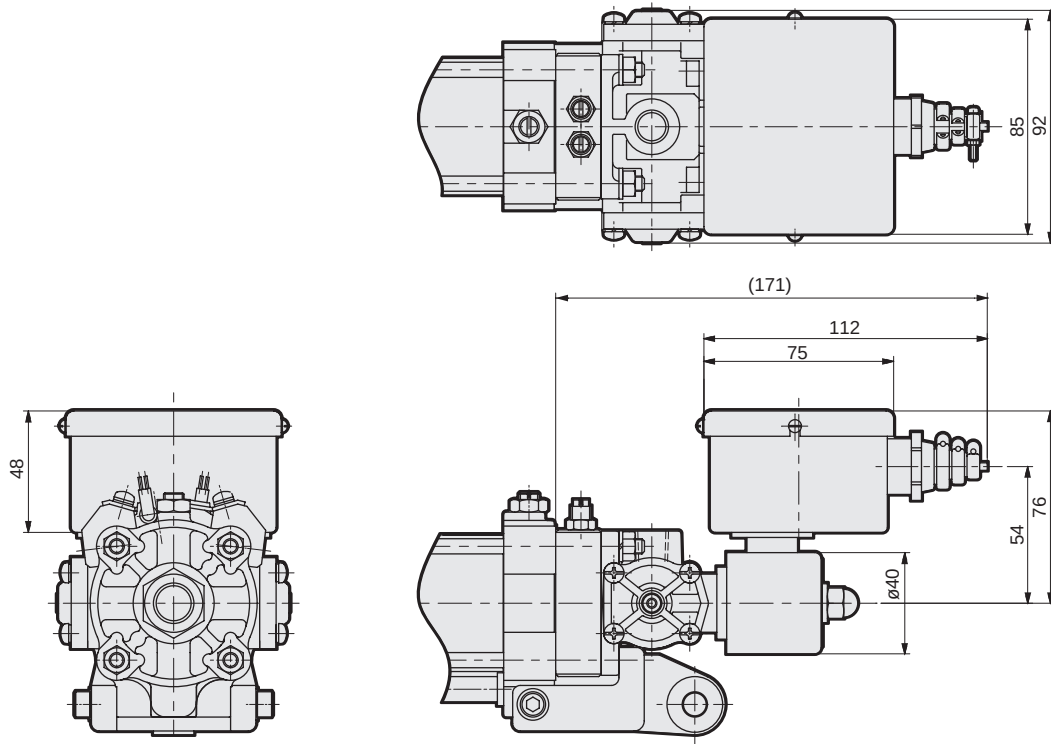
SCP*3	Dimensions with options (TB2)		
CMK2	● CAV2-LB, CAV2-N-LB (double solenoid) Axial foot (LB) with square terminal box (TB2) ø50		
CMA2	*1: For the dimensions of the accessories, refer to page 739. *2: Dimensions with terminal box of the rod side flange and intermediate trunnion are the same as those of the axial foot. For the mounting method, refer to page 718.		
SCM			
SCG			
SCA2			
SCS2			
CKV2			
CAV2/ COVPIN2			
SSD2			
SSG			
SSD			
CAT			
MDC2			
MVC			
SMG			
MSD/ MSDG	● CAV2-LB, CAV2-N-LB (double solenoid) Axial foot (LB) with square terminal box (TB1) ø75/ø100		
FC*	*1: For the dimensions of the accessories, refer to page 739. *2: Dimensions with terminal box of the rod side flange and intermediate trunnion are the same as those of the axial foot. For the mounting method, refer to page 719.		
STK			
SRL3			
SRG3			
SRM3			
SRT3			
MRL2			
MRG2			
SM-25			
ShkAbs			
FJ			
FK			
Spd Contr			
Ending			

Dimensions with options (TB2)

- CAV2-CA, CAV2-N-CA (double solenoid)
Clevis (CA) with square terminal box (TB2) $\varnothing 50$

*1: For the dimensions of the accessories, refer to page 739.

*2: Dimensions with terminal box of the rod side flange and intermediate trunnion are the same as those of the axial foot.
For the mounting method, refer to page 718.



SCP*3

CMK2

CMA2

SCM

SCG

SCA2

SCS2

CKV2

CAV2/
COVP/IN2

SSD2

SSG

SSD

CAT

MDC2

MVC

SMG

MSD/
MSDG

FC*

STK

SRL3

SRG3

SRM3

SRT3

MRL2

MRG2

SM-25

ShkAbs

FJ

FK

Spd
Contr

Ending

CAV2(-S)/CAV2-N(S)

COV^P_N2(-S)/COV^P_N2-N(S) Series

Dimensions with options (Q)

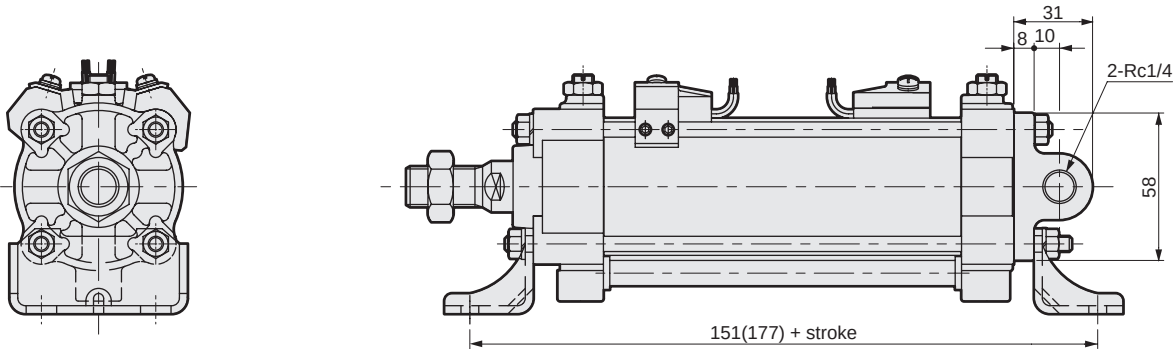
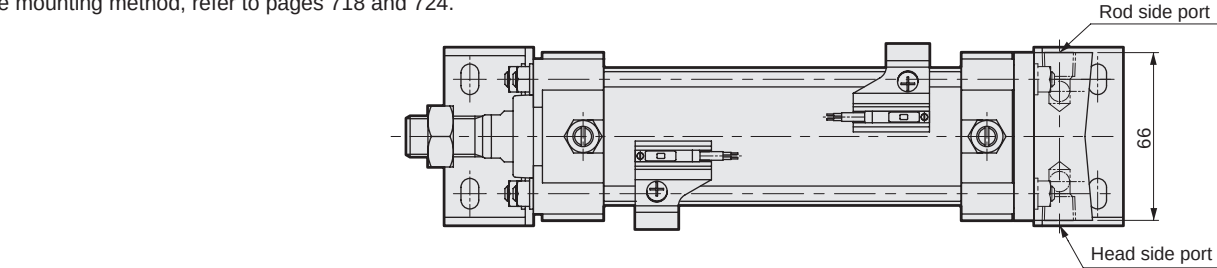
- CAV2/COV^P_N2/CAV2-N/COV^P_N2-N

Supply block (Q) ø50

*1:For the dimensions of the accessories, refer to page 739.

*2:Dimensions with air supply block on the rod side flange and intermediate trunnion are the same as those of the axial foot.

For the mounting method, refer to pages 718 and 724.



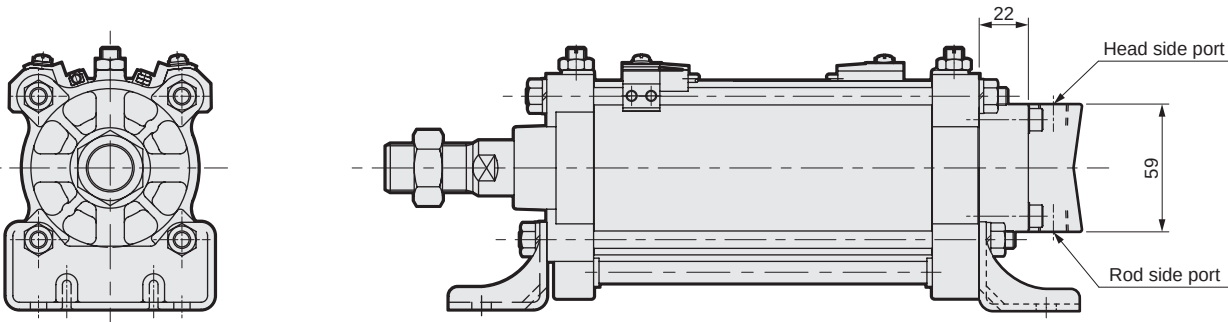
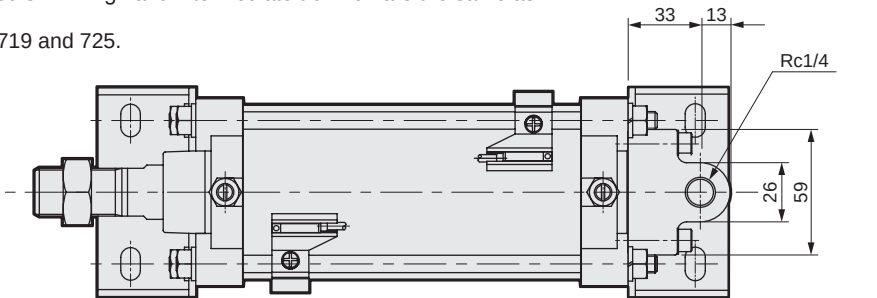
- CAV2/COV^P_N2/CAV2-N/COV^P_N2-N

Supply block (Q) ø75/ø100

*1:For the dimensions of the accessories, refer to page 739.

*2:Dimensions with air supply block on the rod side flange and intermediate trunnion are the same as those of the axial foot.

For the mounting method, refer to pages 719 and 725.

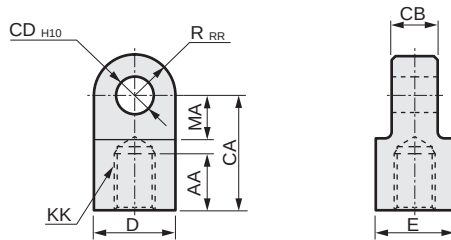




Dimensions: Accessories (rod eye/bracket/pin)

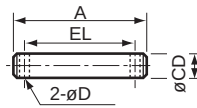
- Rod eye (I)

Material: Cast iron
Painted



Model No.	Applicable bore size (mm)	AA	CA	CB	CD	D	E	KK	MA	RR	Weight (g)
CAV2-50-I	ø50	25	50	20 ⁰ _{-0.3}	14	26	26	M16x1.5	20	15	217
CAV2-75-I	ø75, 100	30	65	28 ⁰ _{-0.3}	20	38	35	M22x1.5	28	22.5	622

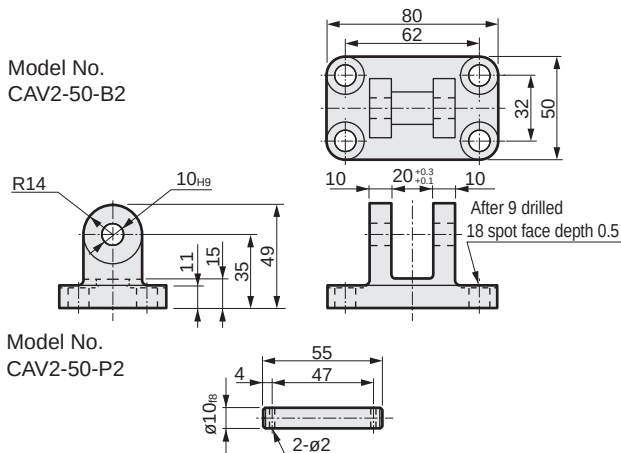
- Rod eye pin (P1)



Note: A split pin and a washer are included.

- Clevis bracket (B2)/pin (P2) for $\varnothing 50$

Material: Body: Cast iron, painted
Pin : Steel, zinc chromate treatment



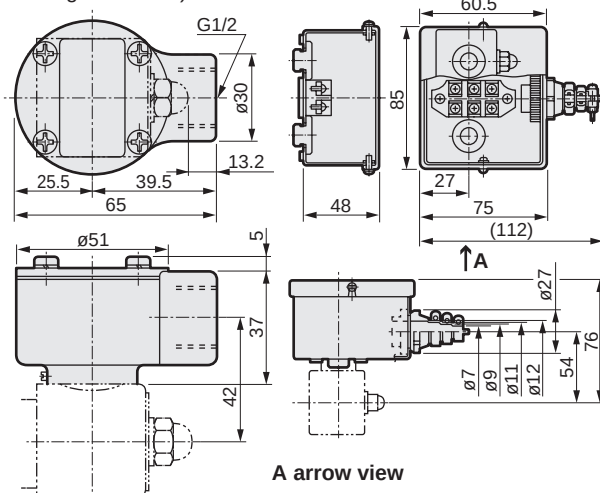
*1 : Clevis bracket includes a pin, split pin (JIS B 1351 $\varnothing 2 \times 15$) and plain washer (JIS B1256 larger diameter for M10).

*2 : For the oscillating range when combined with eye bracket (CA), refer to page 740.

- Terminal box

TB1 (for double solenoid,
single solenoid)

TB2 (for double solenoid)

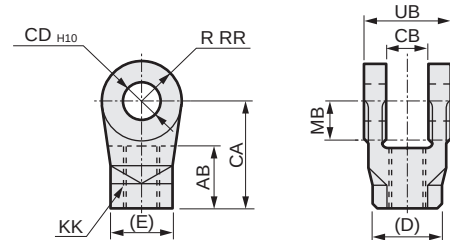


*1 : Built into the cylinder before shipment if ordered together with the cylinder.

*2 : Do not rotate the bonnet with the cap nut tightened.
Doing so may disconnect the coil and lead wire.

- Rod clevis (Y)

Material: Cast iron
Painted



Model No.	Applicable bore size (mm)	AB	CA	CB	CD	D	E	KK	MB	RR	UB	Wt (g)
CAV2-50-Y	ø50	25	50	20 ^{+0.3 0}	14	26.6	23	M16x1.5	20	15	42	189
CAV2-75-Y	ø75, 100	30	65	28 ^{+0.3 0}	20	40.4	35	M22x1.5	30	22.5	60	577

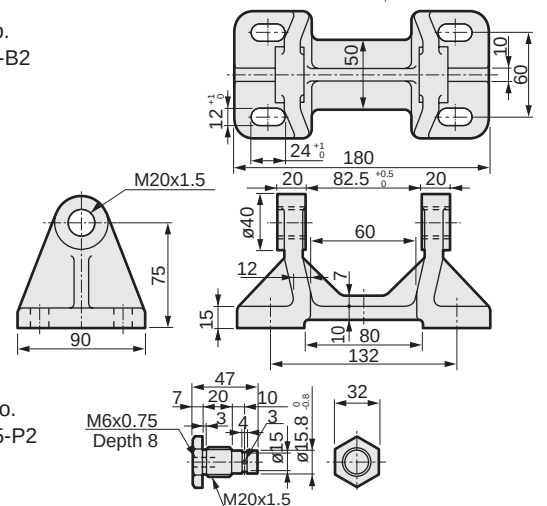
*1: The MB dimension is the effective length of the CB dimension. *2: A pin, a washer and a split pin are included.

Model No.	Applicable bore size (mm)	A	CD	D	EL	Plain washer JIS B 1256 larger diameter	Split pin JIS B 1351	Wt (g)
CAV2-50-P1	ø50	62	ø14 ^{+0.012} _{-0.045}	4	53	For M14	ø4x20	96
CAV2-75-P1	ø75, 100	82	ø20 ^{+0.042} _{-0.075}	4	72	For M20	ø4x25	243

- Clevis bracket (B2)/pin (P2)
for $\varnothing 75/\varnothing 100$

Material: Body: Cast iron, painted
Pin : Steel, zinc chromate treatment

Model No.
CAV2-75-B2



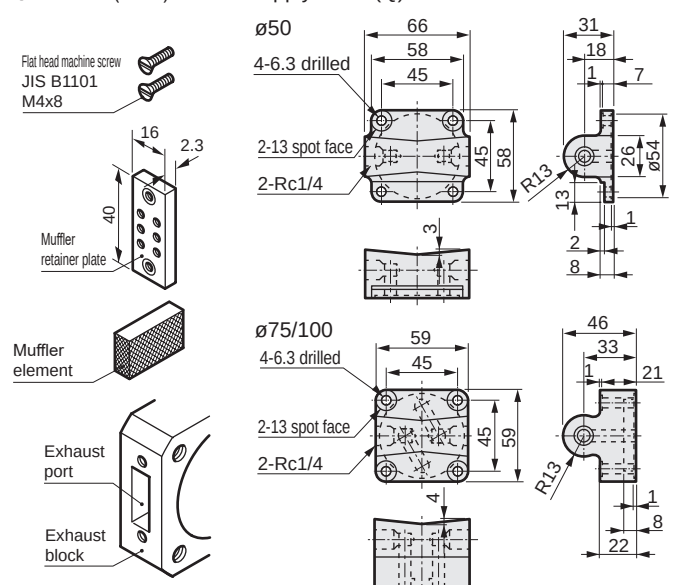
Model No.
CAV2-75-P2

*1 : Clevis bracket includes a pin and toothed washer (JIS B 1225 for M20).

*2 : For the oscillating range when combined with eye bracket (CA), refer to page 740.

- Muffler (MF1)

Supply block (Q)



SCP*3
CMK2
CMA2
SCM
SCG
SCA2
SCS2
CKV2
CAV2/ COVPIIN2
SSD2
SSG
SSD
CAT
MDC2
MVC
SMG
MSD/ MSDG
FC*
STK
SRL3
SRG3
SRM3
SRT3
MRL2
MRG2
SM-25
ShkAbs
FJ
FK
Spd Contr
Ending



Safety Precautions

Be sure to read this section before use.

Refer to Intro Page 73 for general information of the cylinder, and to Intro Page 80 for general information of the cylinder switch.

Product-specific cautions: Cylinder with valve CAV2/COV_N 2 Series

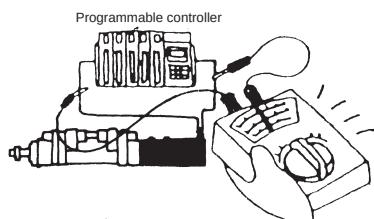
Design/selection

⚠ WARNING

- An inhale effect may be generated at the exhaust port of the valve due to valving element operation, causing the intake of foreign matter near the exhaust port. Foreign matter may also enter when the exhaust port is pointed upwards. Install a silencer and/or arrange the piping of the exhaust port to open facing downward.
- The actuator will not operate correctly if the exhaust air is not discharged smoothly.

⚠ CAUTION

- Instantaneous energization
When the double solenoid is used with instantaneous energization, 0.1 sec. and over energization time is required.
- If the 2-position double solenoid is started and then switched, it will hold that status unless a reverse operation electrical signal is input.
- Check for leakage current to avoid malfunction caused by leakage current from other fluid control components.
 - When a programmable controller is used, leakage current may affect the valve and cause a malfunction.
 - The values affected by leakage current depend on the voltage type. Refer to the table below.



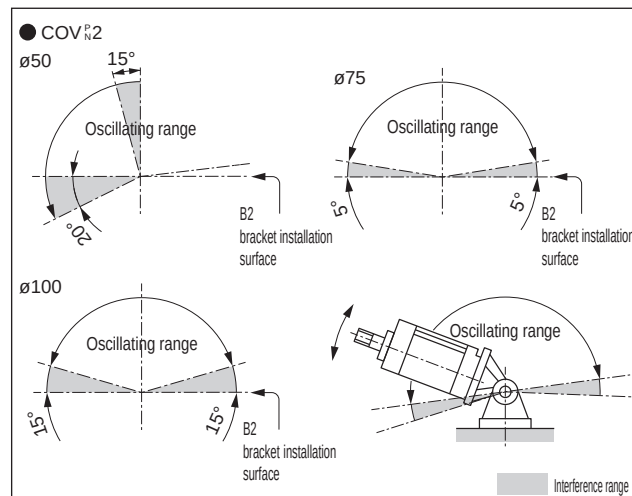
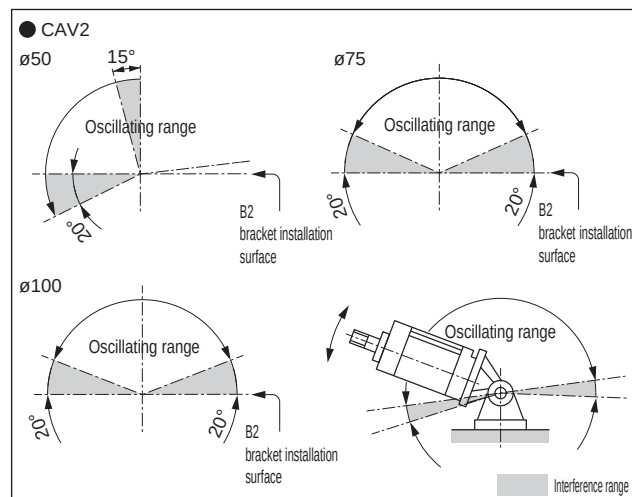
Reference

Using 100 VAC	3.0 mA or less
Using 200 VAC	1.5 mA or less

- Switch the valve at least once every 30 days to prevent malfunction.

■ Oscillating range

- ◎ Note that the oscillating range of the combination of eye bracket (CA) and clevis bracket (B2) is limited as in the figure below.



● With terminal box (TB1 and TB2)

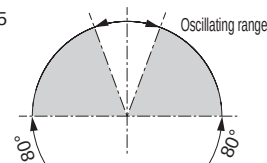
TB1

● CAV2

ø50

The same as the type without terminal box

ø75

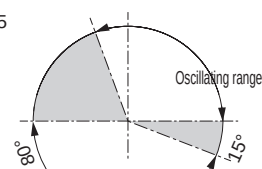


● COV_N 2

ø50

The same as the type without terminal box

ø75



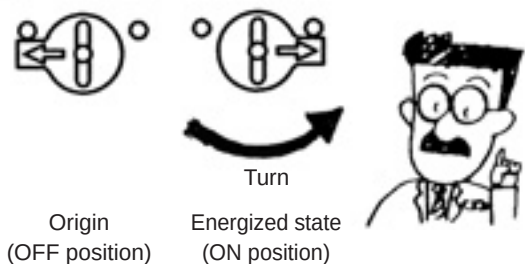
The oscillating range of TB2 (CAV2 ø50) is the same as that of the type without terminal box. COV_N 2 ø50/ø75 and CAV2 ø75 cannot be selected.

Mounting, installation and adjustment

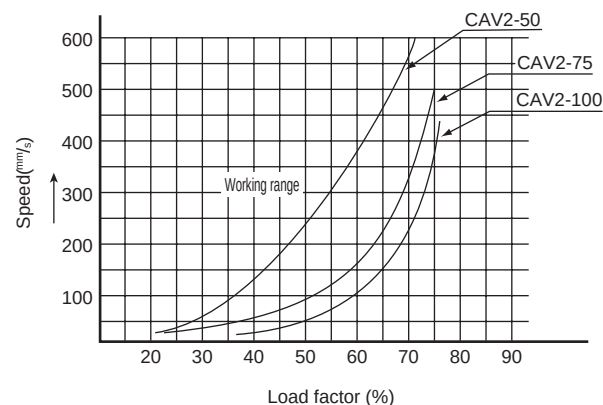
⚠ WARNING

- Manual operation causes the connected device to function. Make sure that there is no danger before performing manual operation.
If you have activated the manual override of the valve, return it to the origin (OFF state) before operating the equipment.
Be sure to confirm automatic return (for non-locking CAV2, COV^P_N2) or origin (OFF state) (for locking COV^P_N2).

[Example]



- If compressed air is supplied when not at origin, the cylinder will become operational, creating hazardous conditions.
- When moving the load with CAV2/COV2 attached vertically, use within the specified range shown as below.
The speed of the cylinder cannot be adjusted outside the range.



⚠ CAUTION

- Be careful not to hit the solenoid valve with a tool or the equipment during mounting.
- Do not support the cylinder with pipes during mounting.
- Do not pick up the product by the coil lead wire.
 - This may lead to disconnection.
- Polarity
All series are without polarity. (Non-polar)
- Applied voltage
When wiring the valve, check that the voltage (AC or DC) and voltage are correct. Failure to comply may cause defective operation or burnout of the coil.
- Checking wiring
After wiring, check that the connections are correct.

SCP*3
CMK2
CMA2
SCM
SCG
SCA2
SCS2
CKV2
CAV2/ COV ^P _N 2
SSD2
SSG
SSD
CAT
MDC2
MVC
SMG
MSD/ MSDG
FC*
STK
SRL3
SRG3
SRM3
SRT3
MRL2
MRG2
SM-25
ShkAbs
FJ
FK
Spd Contr
Ending

Use/maintenance

⚠ WARNING

- Manual operation causes the connected device to function. Make sure that there is no danger before performing manual operation.

⚠ CAUTION

■ Infrequent use

- Switch the valve at least once every 30 days to prevent malfunction.

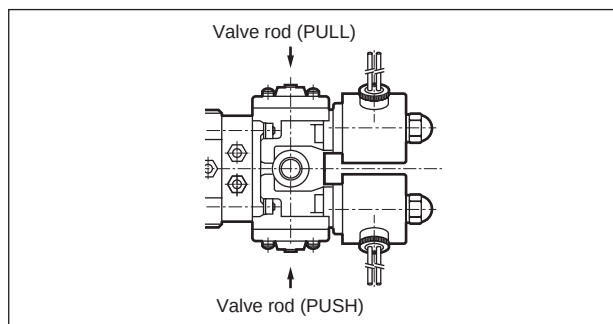
- After disassembling and assembling the valve, be sure to check normal valve operation with the following procedure.

Work procedure

1. Check that the locking manual override is at the origin (OFF state).
2. Configure the unit to low pressure. (0.15MPa)
3. Set the manual override to the operation side (push the non-locking, turn the manual dial for the locking) to check that the cylinder is operational.
4. Return the locking manual override to the origin (OFF state) and check that the cylinder returns. (Manual operation check is complete.)
5. Check the operation electrically.
 - After manual operation check, energize/de-energize to confirm operation.

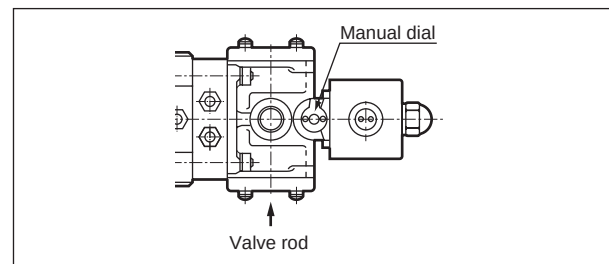
■ Manual operation

- For CAV2



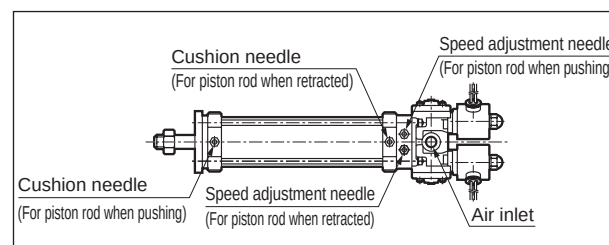
- Pushing the valve rod (PUSH) with a screwdriver extrudes the piston rod.
- Pushing the valve rod (PULL) with a screwdriver retracts the piston rod.
- Although this product is a non-locking, the piston rod is held as it is when PUSH or PULL is pressed.

- For COV2



- Turning the manual dial energizes the solenoid. (Locking)
 - Pressing the valve rod with a screwdriver, etc., energizes the solenoid. (Non-locking)
- For COV2-75 and 100 with CA or B2 mounting bracket,
 ▲ manual operation is possible with the non-locking but not with the locking.

■ How to adjust the speed and cushion of CAV2/COV2



1. The speed decreases when the speed adjustment needle is turned clockwise with a screwdriver, and increases when it is turned counterclockwise.
2. The cushioning effect increases when the cushion needle is turned clockwise with a screwdriver, and decreases when it is turned counterclockwise.