










# Valve Mounted Cylinder

# Series CV/MVGQ

ø10, ø12, ø16, ø20, ø25, ø32, ø40, ø50, ø63, ø80, ø100

## Series Variations

Series	Action	Standard variations					Bore size (mm)	Page
		Built-in magnet	With air cushion	Built-in One-touch fitting	With auto switch	With strong scraper		
<b>Series CVJ5</b> 	Double acting	●			●		10 16	10-15-4
<b>Series CVJ3</b> 	Single acting (Spring return) (Spring extend)	●			●		10 16	10-15-10
<b>Series CVM5/CVM5K</b> 	Double acting	Standard	●		●	●	20 25 32 40	10-15-16 10-15-26
		Non-rotating rod	●		●	●		
<b>Series CVM3/CVM3K</b> 	Single acting (Spring return) (Spring extend)	Standard	●		●	●	20 25 32 40	10-15-31 10-15-44
		Non-rotating rod	●		●	●		
<b>Series CV3/CV3K</b> 	Double acting	Standard	●	●		●	40, 50 63, 80 100	10-15-50
		Non-rotating rod	●	●		●	40, 50 63	10-15-63
<b>Series CVS1/CSV1K</b> 	Double acting	Standard	●	●		●	40, 50 63, 80 100	10-15-67
		Non-rotating rod	●	●		●	40, 50 63	10-15-78
<b>Series MVGQ</b> 	Double acting	●			●		12, 16 20, 25 32, 40 50, 63 80, 100	10-16-1

RE<sup>A</sup><sub>B</sub>

REC

C□X

C□Y

MQ<sup>Q</sup><sub>M</sub>

RHC

MK(2)

RS<sup>Q</sup><sub>G</sub>

RS<sup>H</sup><sub>A</sub>

RZQ

MI<sup>W</sup><sub>S</sub>

CEP1

CE1

CE2

ML2B

C<sub>G</sub>5-S

CV

MVGQ

CC

RB

J

D-

-X

20-

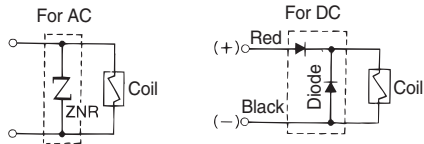
Data

## Applicable series: CVM5, CVM3, MVGQ

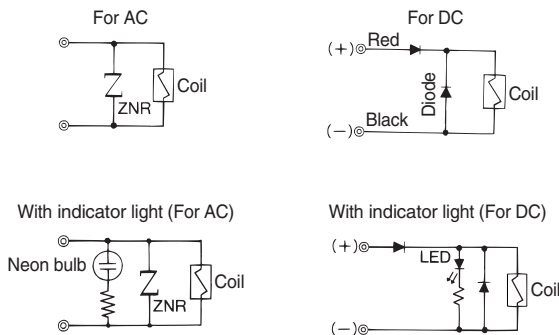
### Light/Surge Voltage Suppressor

#### Warning

##### Grommet

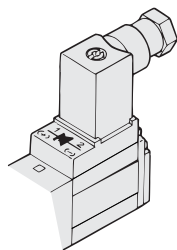


##### L/M plug connector

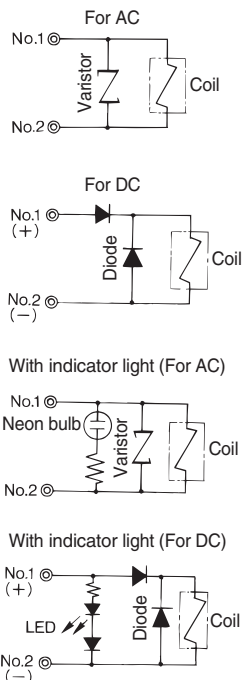
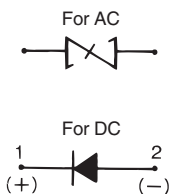


In the case of DC wiring, connect the wires by matching their polarities to the + and - marks. If the lead wires are connected beforehand, the red wire is +, and the black wire is -.

##### DIN terminal



\* Marking



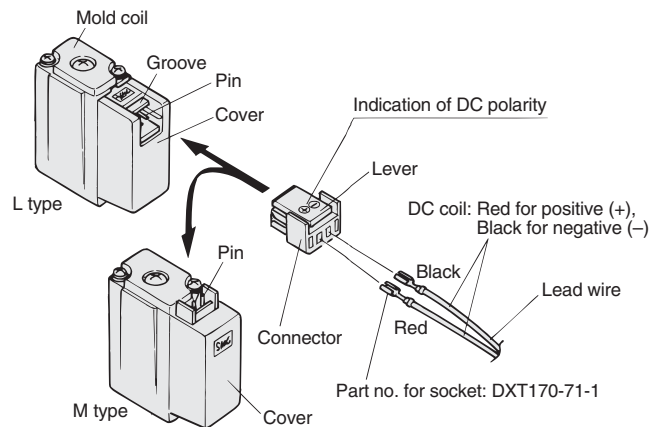
In the case of DC wiring, connect terminal no. 1 of the connector to the positive + side, and terminal no. 2 to the negative - side. (Refer to the marks on the terminal board.)

### Plug Connector

#### Warning

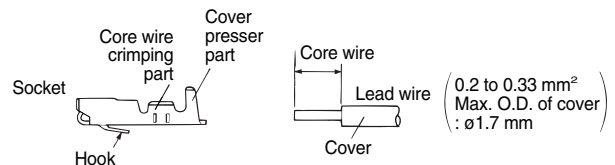
##### 1. Connector installation and removal

- To install the connector, squeeze the lever and the connector body with your fingers, slide the connector straight over the pin, and lock it in place by pushing the tab of the lever into the groove in the cover.
- To remove the connector, press the lever with your thumb to disengage the tab from the groove, and pull the connector straight out.



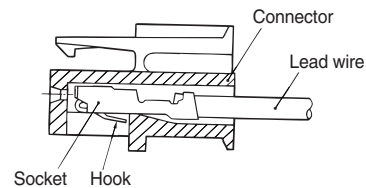
##### 2. Crimping the lead wire into the socket

- Peel approximately 3.2 to 3.7 mm of insulation from the tip of the lead wire, make sure that the ends of the core wire are even, insert the wire into the socket, and crimp it with a crimping tool. At this time, make sure that the insulation of the lead wire does not enter the area in which the core wire is crimped. Use a special crimping tool. (Crimping tool: model no. DX170-75-1)



##### 3. Installation and removal of the sockets containing lead wires

- Installation:** Insert the sockets into the square holes of the connector (marked + and -, respectively), then pinch the lead wires to push them in entirely, allowing the hook on each socket to engage with the seat of the connector, thus locking the socket in place. (Because the hook is open, it locks automatically when the socket is pushed in.) Then, lightly pull on the lead wires to verify that the sockets have been properly locked.
- Removal:** To pull the sockets out of the connector, use a rod with a small end (approximately 1 mm) to press the hook of the socket and pull the lead wire out. To reuse the socket, expand the hook outward.



RE<sup>A</sup><sub>B</sub>

REC

C□X

C□Y

MQ<sup>Q</sup><sub>M</sub>

RHC

MK(2)

RS<sup>Q</sup><sub>G</sub>

RS<sup>H</sup><sub>A</sub>

RZQ

MI<sup>W</sup><sub>S</sub>

CEP1

CE1

CE2

ML2B

C<sup>1</sup>/<sub>5</sub>-S

CV

MVGQ

CC

RB

J

D-

-X

20-

Data



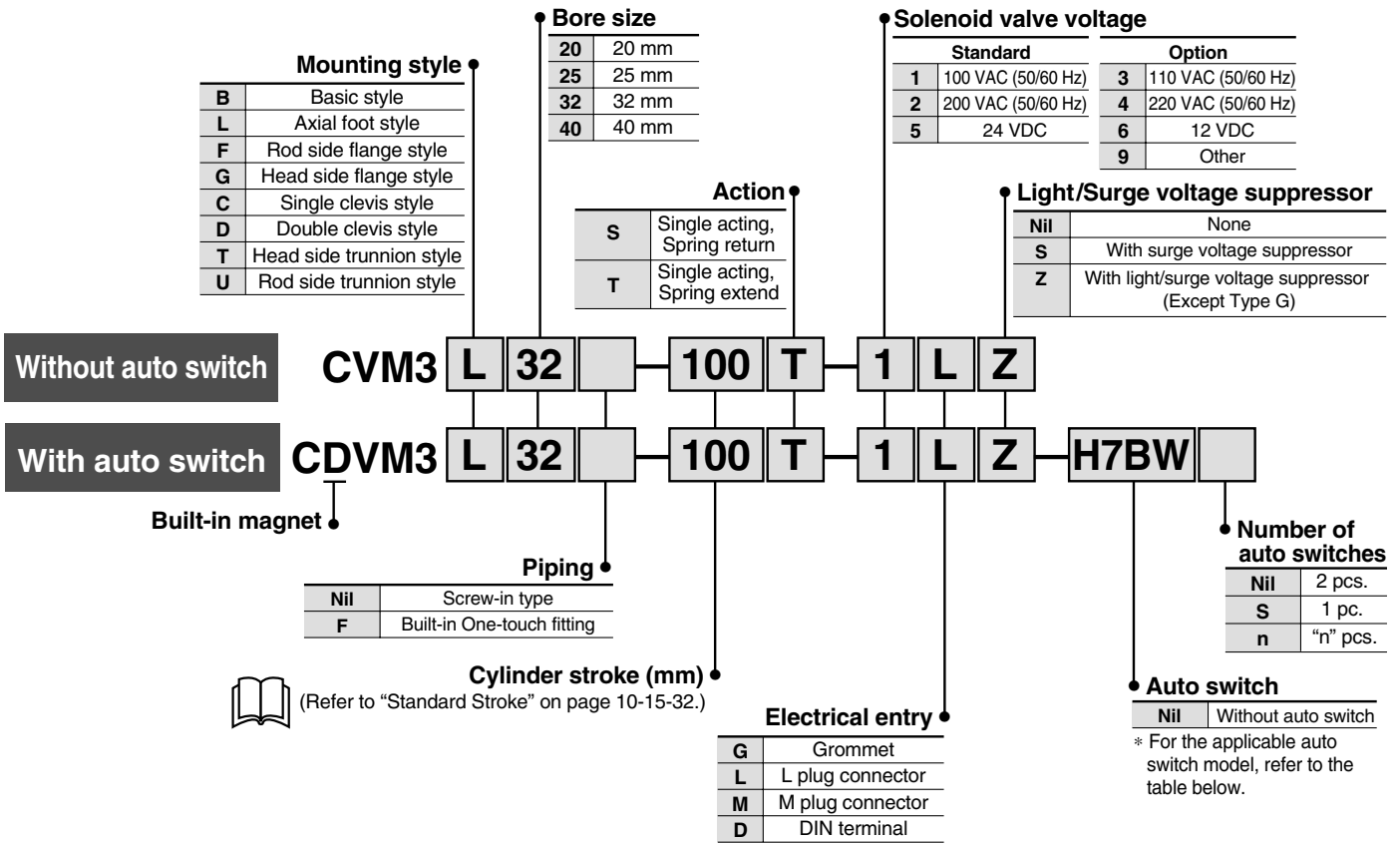
# Valve Mounted Cylinder

## Single Acting, Single Rod, Spring Return/Extend

# Series CVM3

ø20, ø25, ø32, ø40

### How to Order



### Applicable Auto Switch/Refer to page 10-20-1 for further information on auto switches.

Type	Special function	Electrical entry	Indicator light	Wiring (Output)	Load voltage		Auto switch model	Lead wire length (m) *				Pre-wire connector	Applicable load		
					DC	AC		0.5 (Nil)	3 (L)	5 (Z)	None (N)		IC circuit	Relay, PLC	
Reed switch	—	Grommet	Yes	3-wire (NPN equivalent)	—	5 V	C76	●	●	—	—	—	IC circuit	—	
				2-wire	24 V	12 V	100 V, 200 V	C73	●	●	●	—	—	Relay, PLC	
	Diagnostic indication (2-color indication)	Connector	—	—	C73C	●	●	●	●	—	—				
	—	Grommet	—	—	B59W	●	●	—	—	—	—				
Solid state switch	—	Grommet	Yes	3-wire (NPN)	24 V	5 V, 12 V	—	H7A1	●	●	○	—	○	IC circuit	Relay, PLC
				3-wire (PNP)				H7A2	●	●	○	—	○		
		2-wire		H7B				●	●	○	—	○			
		2-wire		H7C				●	●	●	●	—	—		
	Diagnostic indication (2-color indication)	Grommet	Yes	3-wire (NPN)	24 V	5 V, 12 V	—	H7NW	●	●	○	—	○	IC circuit	
				3-wire (PNP)				H7PW	●	●	○	—	○		
		2-wire		H7BW				●	●	○	—	○	—		
		4-wire (NPN)		H7NF				●	●	○	—	○	IC circuit		

\* Lead wire length symbols: 0.5 m ..... Nil (Example) C73C  
 3 m ..... L (Example) C73CL  
 5 m ..... Z (Example) C73CZ  
 None ..... N (Example) C73CN

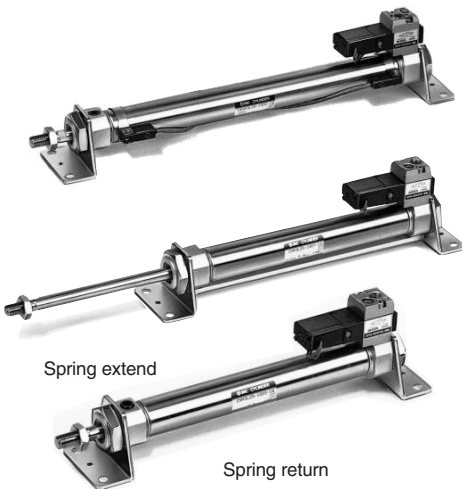
\* Solid state switches marked with "○" are produced upon receipt of order.

- Since there are other applicable auto switches than listed, refer to Best Pneumatics Vol. 6 for details.
- For details about auto switches with pre-wire connector, refer to page 10-20-66.

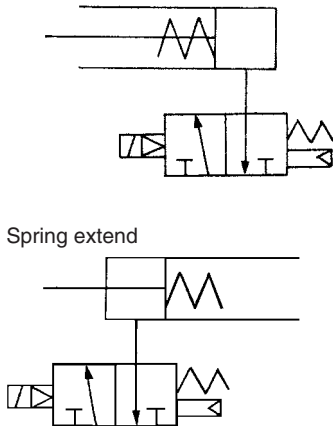
- RE<sup>A</sup><sub>B</sub>
- REC
- C□X
- C□Y
- MQ<sup>Q</sup><sub>M</sub>
- RHC
- MK(2)
- RS<sup>Q</sup><sub>G</sub>
- RS<sup>H</sup><sub>A</sub>
- RZQ
- MI<sup>W</sup><sub>S</sub>
- CEP1
- CE1
- CE2
- ML2B
- C<sup>1</sup><sub>5-S</sub>
- CV
- MVGQ
- CC
- RB
- J
- D-
- X
- 20-
- Data

# Series CVM3

An auto switch cylinder with the switch installed can also be manufactured.



## JIS Symbol



## Made to Order Specifications (For details, refer to page 10-21-1.)

Symbol	Specifications
-XA□	Change of rod end shape

## Specifications

Applicable bore size (mm)		20	25	32	40
Model		Non-lube			
Action		Single acting, Spring return/Spring extend			
Fluid		Air			
Cushion		Rubber bumper			
Proof pressure		1.05 MPa			
Maximum operating pressure		0.7 MPa			
Minimum operating pressure		0.18 MPa Spring return		0.23 MPa Spring extend	
Ambient and fluid temperature		-10 to 50°C (No freezing)			
Lubrication		Not required (Non-lube)			
Thread tolerance		JIS Class 2			
Stroke length tolerance		+1.4 0			
Effective area of valve (Cv factor)		4.5 mm <sup>2</sup> (0.25)			
Piping	Screw-in type	Rc 1/8			
	Built-in One-touch fitting	O.D.: ø6/I.D.: ø4			
Manual override		Non locking (Standard)			
Piston speed (mm/s)		50 to 700	50 to 650	50 to 590	50 to 420
Mounting		Basic style, Axial foot style, Rod side flange style, Head side flange style, Single clevis style, Double clevis style, Head side trunnion style, Rod side trunnion style			

## Allowable Kinetic Energy

Bore size (mm)	20	25	32	40
Allowable kinetic energy	0.27	0.4	0.65	1.2

## Solenoid Valve Specifications

Applicable solenoid valve model		VZ319		
Coil rated voltage		Standard: 100/200 VAC (50/60 Hz), 24 VDC Option: 110/220 VAC, 12 VDC		
Allowable voltage		-15 to 10% of the rated voltage		
Coil insulation		Class B or equivalent (130°C)		
Electrical entry		Grommet, L plug connector, M plug connector, DIN terminal		
Power consumption (W)	Note)	DC		
		1.8 (With indicator light: 2.1)		
Apparent power (VA)	Note)	AC	Inrush	4.5/50 Hz, 4.2/60 Hz
			Holding	3.5/50 Hz, 3.0/60 Hz

Note) At the rated voltage.

## Standard Stroke

Bore size (mm)	Standard stroke (mm) Note)
20	25, 50, 75, 100, 125, 150 *
25	25, 50, 75, 100, 125, 150 *
32	25, 50, 75, 100, 125, 150, 200 *
40	25, 50, 75, 100, 125, 150, 200, 250 *

Note 1) Intermediate stroke except mentioned above is produced upon receipt of order.  
Note 2) Strokes marked with "\*" are the maximum strokes which are available.

## Theoretical Output

Refer to "Theoretical Output Table 1" on page 10-23-1.

## Spring Reaction Force

Refer to "Spring Reaction Force" on page 10-23-1.

# Valve Mounted Cylinder Single Acting, Single Rod, Spring Return/Extend Series CVM3

## Mounting Bracket and Accessory

Accessory	Standard equipment			Option	
	Mounting nut	Rod end nut	Clevis pin	Single knuckle joint	Double knuckle joint <sup>(3)</sup>
Basic style	● (1 pc.)	●	—	●	●
Axial foot style	● (2)	●	—	●	●
Rod side flange style	● (1)	●	—	●	●
Head side flange style	● (1)	●	—	●	●
Single clevis style	— <sup>(1)</sup>	●	—	●	●
Double clevis style <sup>(3)</sup>	— <sup>(1)</sup>	●	●	●	●
Head side trunnion style	● (1) <sup>(2)</sup>	●	—	●	●
Rod side trunnion style	● (1) <sup>(2)</sup>	●	—	●	●

Note 1) Mounting nut is not equipped with single clevis style and double clevis style.

Note 2) Trunnion nuts are equipped for head side trunnion and rod side trunnion.

Note 3) Pin and set ring are shipped together with double clevis and double knuckle joint.

## Weight

Spring Return/( ): Denotes Spring Extend.

Bore size (mm)		(kg)			
		20	25	32	40
Basic weight	25 stroke	0.30 (0.30)	0.40 (0.04)	0.52 (0.51)	0.87 (0.86)
	50 stroke	0.32 (0.32)	0.43 (0.43)	0.56 (0.56)	0.94 (0.93)
	75 stroke	0.37 (0.37)	0.52 (0.51)	0.68 (0.66)	1.13 (1.09)
	100 stroke	0.39 (0.39)	0.55 (0.54)	0.73 (0.70)	1.19 (1.16)
	125 stroke	0.45 (0.44)	0.64 (0.61)	0.86 (0.82)	1.39 (1.33)
	150 stroke	0.47 (0.46)	0.67 (0.64)	0.90 (0.86)	1.46 (1.40)
	200 stroke	— (—)	— (—)	1.07 (1.02)	1.71 (1.63)
Mounting bracket weight	250 stroke	— (—)	— (—)	— (—)	1.97 (1.85)
	Axial foot	0.15 (0.15)	0.16 (0.16)	0.16 (0.16)	0.27 (0.27)
	Flange	0.06 (0.06)	0.09 (0.09)	0.09 (0.09)	0.12 (0.12)
	Single clevis	0.04 (0.04)	0.04 (0.04)	0.04 (0.04)	0.09 (0.09)
	Double clevis	0.05 (0.05)	0.06 (0.06)	0.06 (0.06)	0.13 (0.13)
Option bracket	Trunnion	0.04 (0.04)	0.07 (0.07)	0.07 (0.07)	0.10 (0.10)
	Single knuckle joint	0.06 (0.06)	0.06 (0.06)	0.06 (0.06)	0.23 (0.23)
	Double knuckle (With pin)	0.07 (0.07)	0.07 (0.07)	0.07 (0.07)	0.20 (0.02)

Calculation: (Example) CVM3L32-100-1G (ø32, 100 stroke, Spring return)

- Basic weight.....0.73 (kg)
  - Weight of brackets.....0.16 (kg)
- 0.73 + 0.16 = 0.89 kg

## Minimum Stroke for Auto Switch Mounting

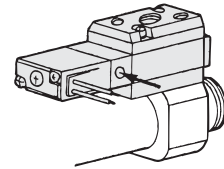
Auto switch model	No. of auto switches mounted				1
	2		n		
	Different sides	Same side	Different sides	Same side	
D-C7□/C80	15	50	15 + 45 ( $\frac{n-2}{2}$ )	50 + 45 (n - 2)	10
D-H7□/H7□W D-H7NF	15	60	(n = 2, 4, 6...)	60 + 45 (n - 2)	10
D-C73C/C80C D-H7C	15	65	15 + 50 ( $\frac{n-2}{2}$ ) (n = 2, 4, 6...)	65 + 50 (n - 2)	10
D-B5□ D-B64 D-G5NTL	15	75	15 + 50 ( $\frac{n-2}{2}$ ) (n = 2, 4, 6...)	75 + 55 (n - 2)	10
D-B59W	20	75	20 + 50 ( $\frac{n-2}{2}$ ) (n = 2, 4, 6...)		15

## Accessory Bracket

Further information on accessories are the same specifications as these of the standard double acting single rod. Refer to Best Pneumatics Vol. 6.

## Manual Operation

Manual operation is possible by pushing the manual button indicated with the arrow.



## ⚠ Precautions

Be sure to read before handling. For Safety Instructions and Actuator Precautions, refer to pages 10-24-3 to 10-24-6.

### Operating Precautions

#### ⚠ Warning

##### 1. Do not rotate the cover.

If a cover is rotated when installing a cylinder or screwing a fitting into the port, it is likely to damage the junction part with cover.

#### ⚠ Caution

##### 1. Not able to disassemble.

Cover and cylinder tube are connected to each other by caulking method, thus making it impossible to disassemble. Therefore, internal parts of a cylinder other than rod seal are not replaceable.

##### 2. Use caution to the popping of a snap ring.

When replacing rod seals and removing and mounting a snap ring, use a proper tool (snap ring plier: tool for installing type C snap ring). Even if a proper tool is used, it is likely to inflict damage to a human body or peripheral equipment, as a snap ring may be flown out of the tip of a plier. Be much careful with the popping of a snap ring. Besides, be certain that a snap ring is placed firmly into the groove of rod cover before supplying air at the time of installment.

##### 3. Do not touch the cylinder during operation.

Use caution when handling a cylinder, which is running at a high speed and a high frequency, because the surface of a cylinder tube could get so hot enough as to cause you get burned.

##### 4. One-touch fitting cannot be replaced.

One-touch fitting is press-fit into the cover, thus cannot be replaced.

RE<sup>A</sup><sub>B</sub>

REC

C□X

C□Y

MQ<sup>Q</sup><sub>M</sub>

RHC

MK(2)

RS<sup>Q</sup><sub>G</sub>

RS<sup>H</sup><sub>A</sub>

RZQ

MI<sup>W</sup><sub>S</sub>

CEP1

CE1

CE2

ML2B

C<sup>1</sup>/<sub>5</sub>-S

CV

MVGQ

CC

RB

J

D-

-X

20-

Data

# Series CVM3

## Built-in One-touch Fitting

CVM3 Mounting style Bore size **F** — For “How to Order”, refer to page 10-15-31.

• Built-in One-touch fitting

One-touch fittings are installed on cylinders.



For dimensions of each mounting bracket, refer to page 10-15-37 and after.

## Specifications

Action	Single acting, Spring return	Single acting, Spring extend		
Bore size (mm)	20, 25, 32, 40			
Max. operating pressure	0.7 MPa			
Min. operating pressure	0.18 MPa	0.23 MPa		
Cushion	Rubber bumper			
Piping	Built-in One-touch fitting			
Piston speed (mm/s)	ø20	ø25	ø32	ø40
	50 to 700	50 to 650	50 to 590	50 to 420
Port size (Tube bore size)	O.D.: ø6/I.D.: ø4			
Applicable bore size	Can be used for either nylon, soft nylon or polyurethane tube.			
Mounting	Basic style, Axial foot style, Rod side flange style, Head side flange style, Single clevis style, Double clevis style, Head side trunnion style, Rod side trunnion style			

## Mounting Bracket Part No.

Bore size (mm)	20	25	32	40
Axial foot*	CM-L020B	CM-L032B	CM-L040B	
Flange	CM-F020B	CM-F032B	CM-F040B	
Single clevis	CM-C020B	CM-C032B	CM-C040B	
Double clevis**	CM-D020B	CM-D032B	CM-D040B	
Trunnion (with nut)	CM-T020B	CM-T032B	CM-T040B	

\* Two foot brackets and a mounting nut are attached.

When ordering the foot bracket., order 2 pcs. per cylinder.

\*\* Clevis pin and snap ring (cotter pin for ø40) are packaged together.

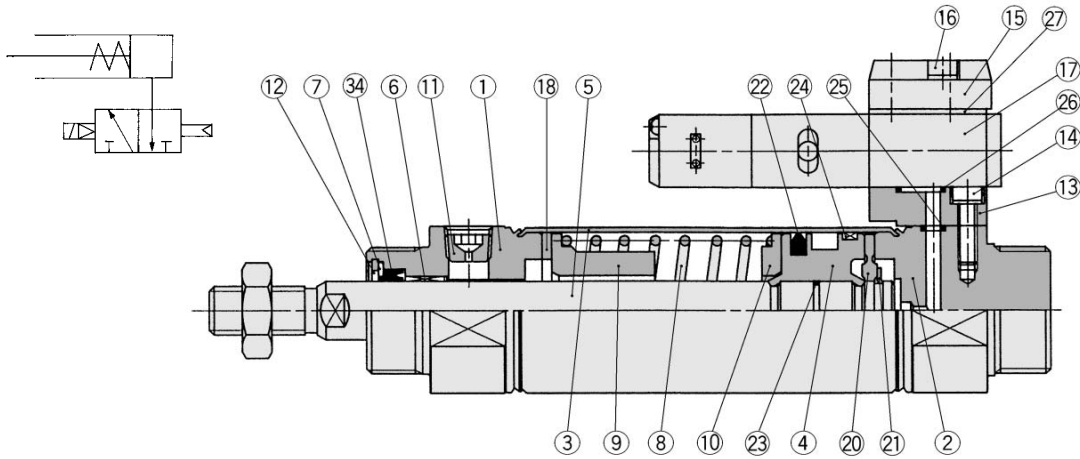
## Auto Switch Mounting Bracket Part No.

Auto switch model	Bore size (mm)			
	20	25	32	40
<b>D-C7□/C80</b> <b>D-H7□</b>	BM2-020	BM2-025	BM2-032	BM2-040
<b>D-B5□/B64</b> <b>D-G5NTL</b>	BA2-020	BA2-025	BA2-032	BA2-040

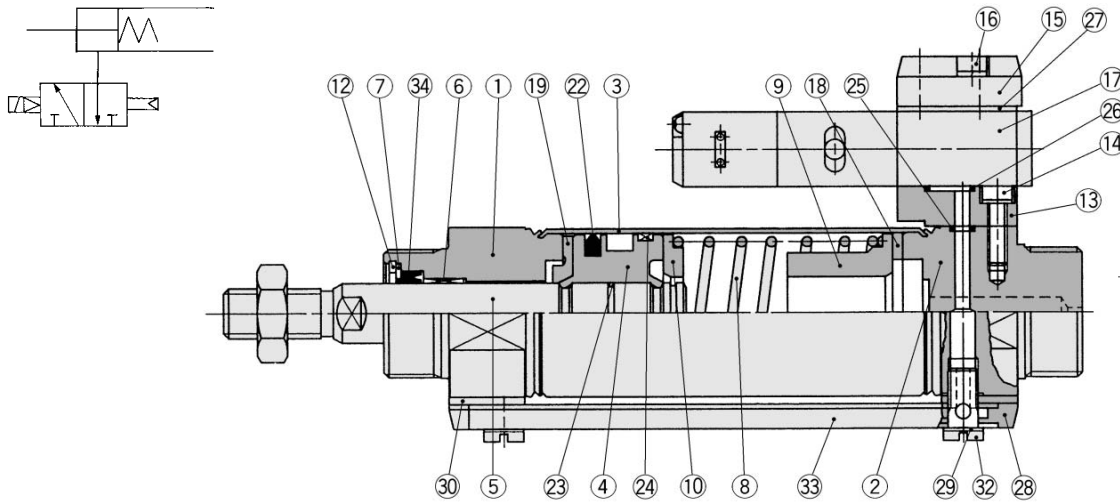
# Valve Mounted Cylinder Single Acting, Single Rod, Spring Return/Extend Series CVM3

## Construction

### Spring return



### Spring extend



### Component Parts

No.	Description	Material	Note
①	Rod cover	Aluminum alloy	Clear anodized
②	Head cover	Aluminum alloy	Clear anodized
③	Cylinder tube	Stainless steel	
④	Piston	Aluminum alloy	Chromated
⑤	Piston rod	Carbon steel	Hard chromium electroplated
⑥	Bushing	Oil-impregnated sintered alloy	
⑦	Seal retainer	Rolled steel	Nickel plated
⑧	Return spring	Steel wire	Zinc chromated
⑨	Spring guide	Aluminum alloy	Chromated
⑩	Spring seat	Aluminum alloy	Chromated
⑪	Plug with fixed orifice	Alloy steel	Black zinc chromated
⑫	Snap ring	Carbon tool steel	Nickel plated
⑬	Sub-plate	Aluminum alloy	Metallic painted
⑭	Hex. socket head cap screw with spring washer	Stainless steel	M3 x 10ℓ
⑮	Plate	Aluminum alloy	Metallic painted
⑯	Hex. socket head cap screw with spring washer	Stainless steel	M3 x 28ℓ
⑰	Solenoid valve	—	Refer to "How to order" below.*
⑱	Bumper	Urethane	
⑲	Bumper A	Urethane	

No.	Description	Material	Note
⑳	Bumper B	Urethane	
㉑	Snap ring	Stainless steel	
㉒	Piston seal	NBR	
㉓	Piston gasket	NBR	
㉔	Wear ring	Resin	
㉕	Head cover gasket	NBR	
㉖	Sub-plate gasket	NBR	
㉗	Gasket	NBR	
㉘	Pipe gasket	Urethane rubber	
㉙	Gasket	Resin	
㉚	Spacer gasket	Resin	
㉛	One-touch fitting	—	Port size: ø6
㉜	Stud	Brass	Electroless nickel plated
㉝	Pipe	Aluminum alloy	Clear anodized

### Replacement Parts

No.	Description	Material	Part no.			
			20	25	32	40
⑳	Rod seal	NBR	PDU-8Z	PDU-10Z	PDU-12LZ	PDU-14LZ

\* How to order solenoid valves  
VZ319-[Voltage] [Electrical entry]

RE<sup>A</sup><sub>B</sub>

REC

C□X

C□Y

MQ<sup>Q</sup><sub>M</sub>

RHC

MK(2)

RS<sup>Q</sup><sub>G</sub>RS<sup>H</sup><sub>A</sub>

RZQ

MI<sup>W</sup><sub>S</sub>

CEP1

CE1

CE2

ML2B

C<sup>1</sup><sub>5-S</sub>

CV

MVGQ

CC

RB

J

D-

-X

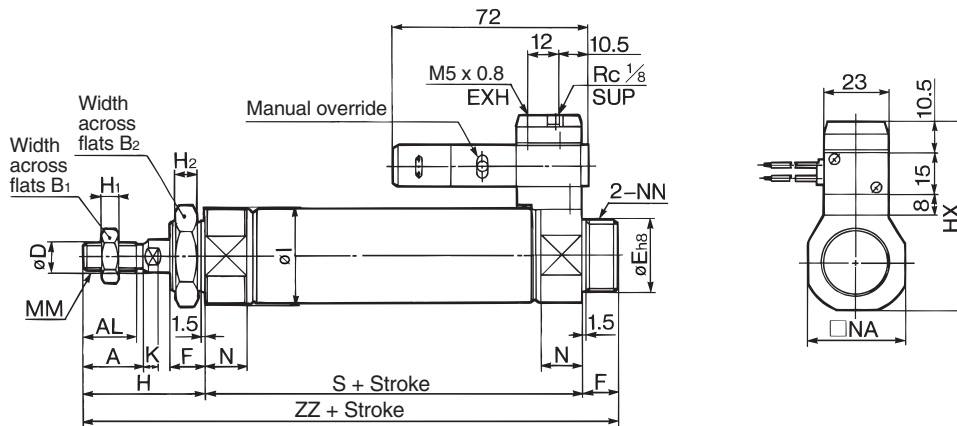
20-

Data

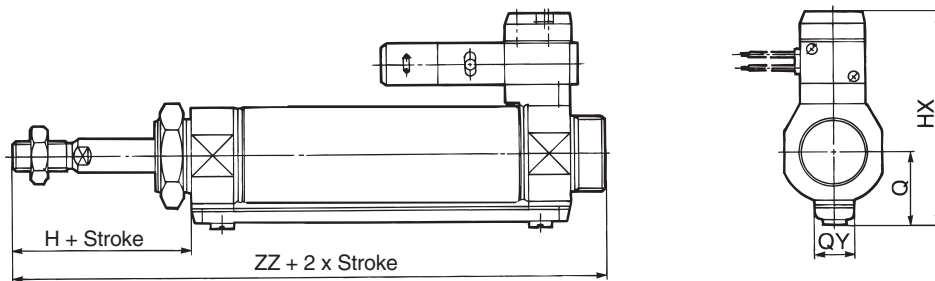
# Series CVM3

## Basic Style (B)

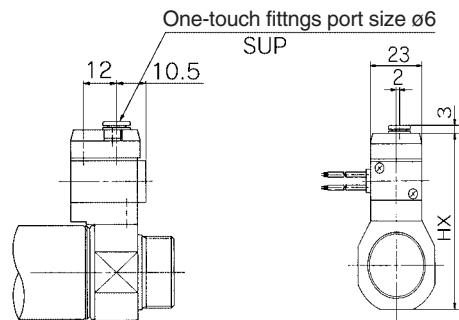
Single acting, Spring return: CVM3B Bore size Stroke S



Single acting, Spring extend: CVM3B Bore size Stroke T



### Built-in One-touch fitting



Bore size (mm)	A	AL	B <sub>1</sub>	B <sub>2</sub>	D	Eh <sub>8</sub>	F	H	H <sub>1</sub>	H <sub>2</sub>	HX	I	K	MM	N	NA	NN
20	18	15.5	13	26	8	20 <sup>0</sup> <sub>-0.033</sub>	13	41	5	8	57.5	28	5	M8 x 1.25	15	24	M20 x 1.5
25	22	19.5	17	32	10	26 <sup>0</sup> <sub>-0.033</sub>	13	45	6	8	63.5	33.5	5.5	M10 x 1.25	15	30	M26 x 1.5
32	22	19.5	17	32	12	26 <sup>0</sup> <sub>-0.033</sub>	13	45	6	8	68	37.5	5.5	M10 x 1.25	15	34.5	M26 x 1.5
40	24	21	22	41	14	32 <sup>0</sup> <sub>-0.039</sub>	16	50	8	10	76	46.5	7	M14 x 1.5	21.5	42.5	M32 x 2

### Dimensions by Stroke

Stroke Symbol Bore (mm)	1 to 50		51 to 100		101 to 150		151 to 200		201 to 250	
	S	ZZ	S	ZZ	S	ZZ	S	ZZ	S	ZZ
20	87	141	112	166	137	191	—	—	—	—
25	87	145	112	170	137	195	—	—	—	—
32	89	147	114	172	139	197	164	222	—	—
40	113	179	138	204	163	229	188	254	213	279

### Single Acting/Spring Extend

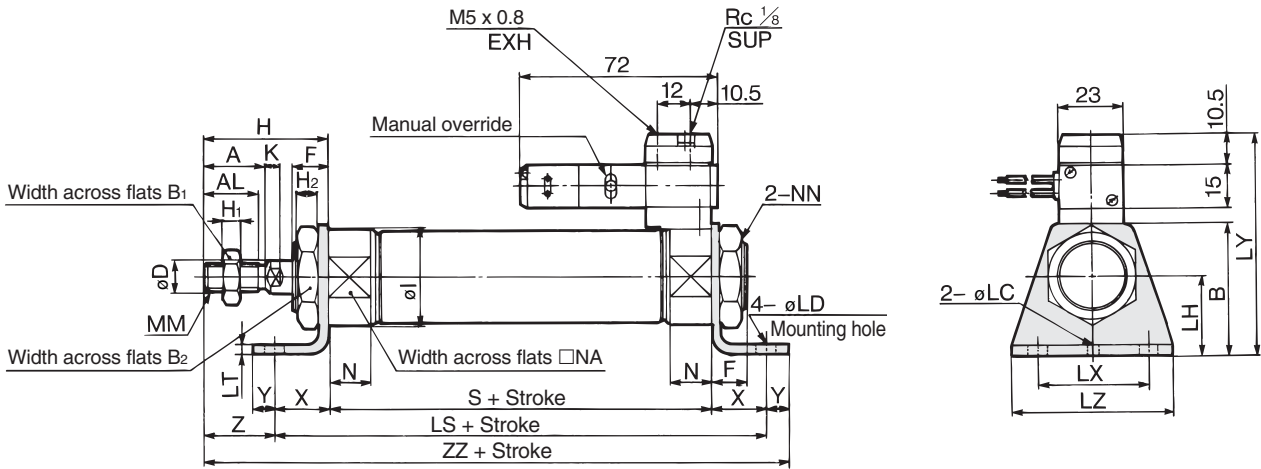
Bore size (mm)	HX	Q	QY
20	65.3	19.8	14
25	70.5	22	14
32	76.5	25.8	16
40	84.5	29.8	16



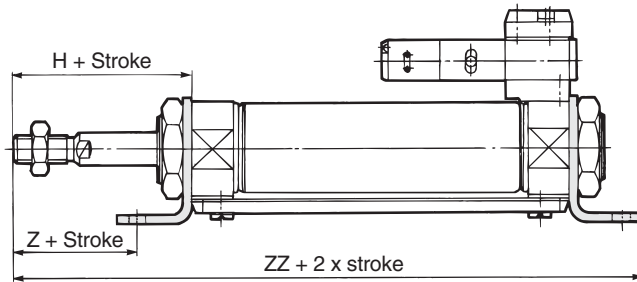
# Valve Mounted Cylinder Single Acting, Single Rod, Spring Return/Extend Series **CVM3**

## Axial Foot Style (L)

Single acting, Spring return: CVM3L Bore size Stroke S



Single acting, Spring extend: CVM3L Bore size Stroke T



Bore size (mm)	A	AL	B	B <sub>1</sub>	B <sub>2</sub>	D	F	H	H <sub>1</sub>	H <sub>2</sub>	I	K	LC	LD	LH	LT	LX	LY	LZ	MM	N	NA
20	18	15.5	40	13	26	8	13	41	5	8	28	5	4	6.8	25	3.2	40	70.5	55	M8 x 1.25	15	24
25	22	19.5	47	17	32	10	13	45	6	8	33.5	5.5	4	6.8	28	3.2	40	76.5	55	M10 x 1.25	15	30
32	22	19.5	47	17	32	12	13	45	6	8	37.5	5.5	4	6.8	28	3.2	40	78.8	55	M10 x 1.25	15	34.5
40	24	21	54	22	41	14	16	50	8	10	46.5	7	4	7	30	3.2	55	84.8	75	M14 x 1.5	21.5	42.5

### Dimensions by Stroke

Bore size (mm)	NN	X	Y	Z	Stroke													
					1 to 50			51 to 100			101 to 150			151 to 200			201 to 250	
Symbol	S	LS	ZZ	S	LS	ZZ	S	LS	ZZ	S	LS	ZZ	S	LS	ZZ	S	LS	ZZ
20	87	127	156	112	152	181	137	177	206	—	—	—	—	—	—	—	—	—
25	87	127	160	112	152	185	137	177	210	—	—	—	—	—	—	—	—	—
32	89	129	162	114	154	187	139	179	212	164	204	237	—	—	—	—	—	—
40	113	159	196	138	184	221	163	209	246	188	234	271	213	259	296	—	—	—

RE<sup>A</sup><sub>B</sub>

REC

C□X

C□Y

MQ<sup>Q</sup><sub>M</sub>

RHC

MK(2)

RS<sup>Q</sup><sub>G</sub>

RS<sup>H</sup><sub>A</sub>

RZQ

MI<sup>W</sup><sub>S</sub>

CEP1

CE1

CE2

ML2B

C<sup>1</sup>/<sub>5</sub>-S

**CV**

MVGQ

CC

RB

J

D-

-X

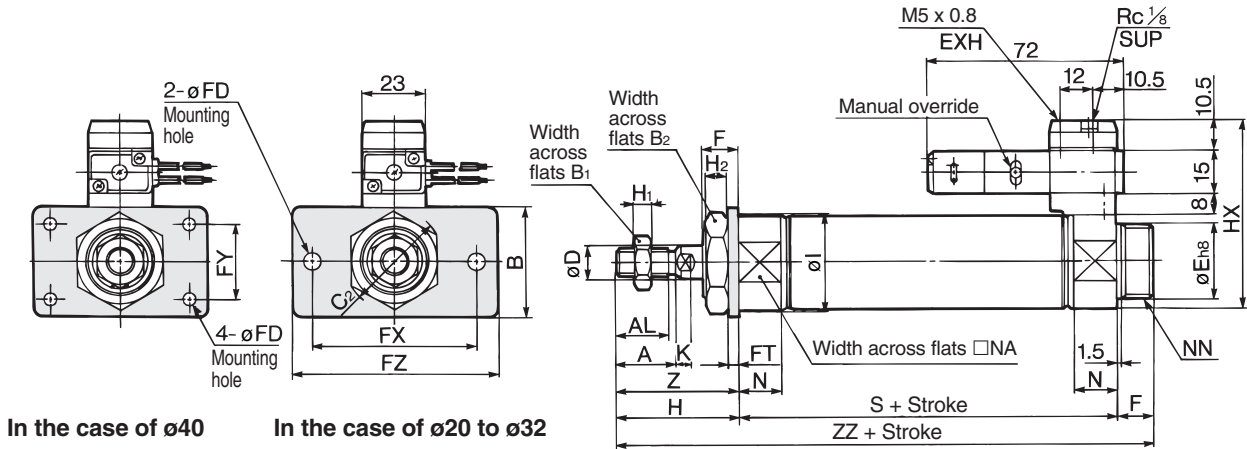
20-

Data

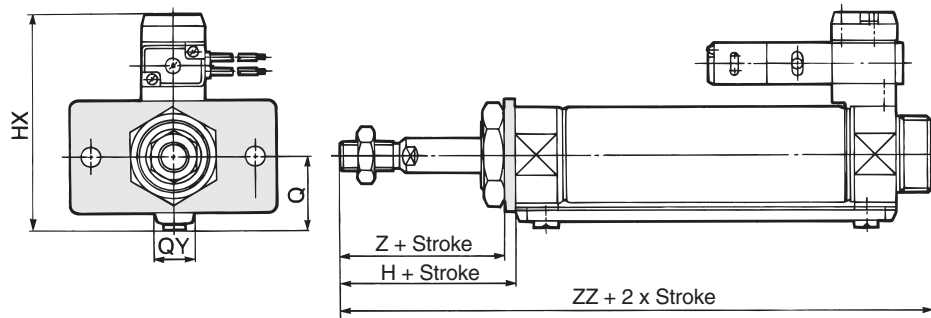
# Series CVM3

## Rod Side Flange Style (F)

Single acting, Spring return: CVM3F Bore size Stroke S



Single acting, Spring extend: CVM3F Bore size Stroke T



Bore size (mm)	A	AL	B	B <sub>1</sub>	B <sub>2</sub>	C <sub>2</sub>	D	E <sub>h8</sub>	F	FD	FT	FX	FY	FZ	H	H <sub>1</sub>	H <sub>2</sub>	HX	I	K
20	18	15.5	34	13	26	30	8	20 <sup>0</sup> <sub>-0.033</sub>	13	7	4	60	—	75	41	5	8	57.5	28	5
25	22	19.5	40	17	32	37	10	26 <sup>0</sup> <sub>-0.033</sub>	13	7	4	60	—	75	45	6	8	63.5	33.5	5.5
32	22	19.5	40	17	32	37	12	26 <sup>0</sup> <sub>-0.033</sub>	13	7	4	60	—	75	45	6	8	68	37.5	5.5
40	24	21	52	22	41	47.3	14	32 <sup>0</sup> <sub>-0.039</sub>	16	7	5	66	36	82	50	8	10	76	46.5	7

### Dimensions by Stroke

Bore size (mm)	MM	N	NA	NN	Z
20	M8 x 1.25	15	24	M20 x 1.5	37
25	M10 x 1.25	15	30	M26 x 1.5	41
32	M10 x 1.25	15	34.5	M26 x 1.5	41
40	M14 x 1.5	21.5	42.5	M32 x 2	45

Stroke Symbol	1 to 50		51 to 100		101 to 150		151 to 200		201 to 250	
	S	ZZ	S	ZZ	S	ZZ	S	ZZ	S	ZZ
20	87	141	112	166	137	191	—	—	—	—
25	87	145	112	170	137	195	—	—	—	—
32	89	147	114	172	139	197	164	222	—	—
40	113	179	138	204	163	229	188	254	213	279

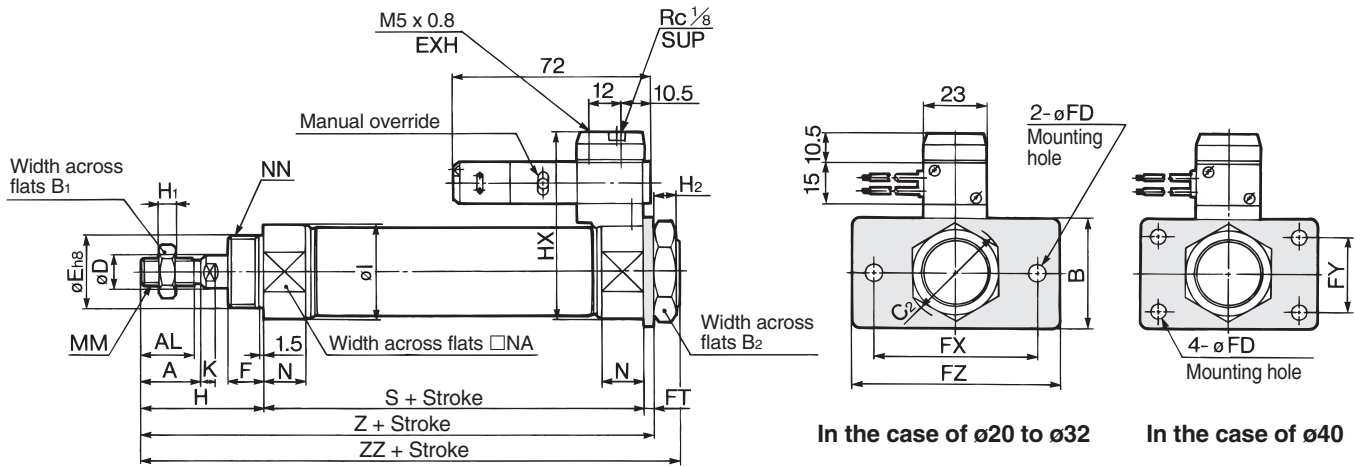
### Single Acting/Spring Extend

Bore size (mm)	HX	Q	QY
20	65.3	19.8	14
25	70.5	22	14
32	76.5	25.8	16
40	84.5	29.8	16

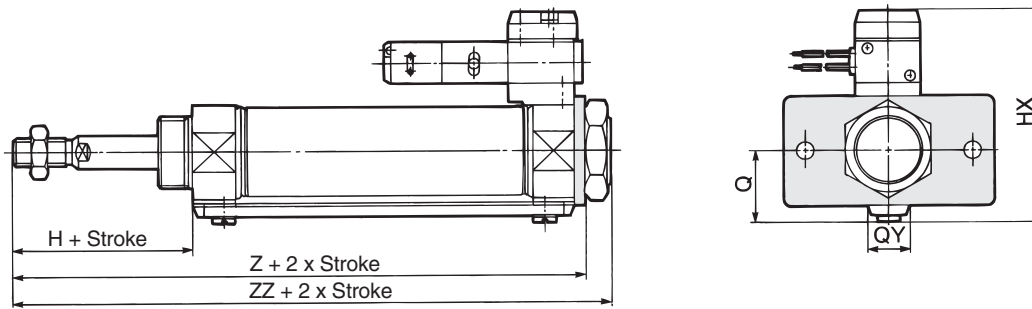
# Valve Mounted Cylinder Single Acting, Single Rod, Spring Return/Extend Series **CVM3**

## Head Side Flange Style (G)

Single acting, Spring return: CVM3G Bore size Stroke **S**



Single acting, Spring extend: CVM3G Bore size Stroke **T**



Bore size (mm)	A	AL	B	B <sub>1</sub>	B <sub>2</sub>	C <sub>2</sub>	D	E <sub>h</sub>	F	FD	FT	FX	FY	FZ	H	H <sub>1</sub>	H <sub>2</sub>	HX	I	K	MM
20	18	15.5	34	13	26	30	8	20 <sup>0</sup> <sub>-0.033</sub>	13	7	4	60	—	75	41	5	8	57.5	28	5	M8 x 1.25
25	22	19.5	40	17	32	37	10	26 <sup>0</sup> <sub>-0.033</sub>	13	7	4	60	—	75	45	6	8	63.5	33.5	5.5	M10 x 1.25
32	22	19.5	40	17	32	37	12	26 <sup>0</sup> <sub>-0.033</sub>	13	7	4	60	—	75	45	6	8	68	37.5	5.5	M10 x 1.25
40	24	21	52	22	41	47.3	14	32 <sup>0</sup> <sub>-0.039</sub>	16	7	5	66	36	82	50	8	10	76	46.5	7	M14 x 1.5

### Dimensions by Stroke

Bore size (mm)	N	NA	NN	Stroke																	
				Symbol	1 to 50	51 to 100	101 to 150	151 to 200	201 to 250												
20	15	24	M20 x 1.5	<b>20</b>	87	132	141	112	157	166	137	182	191	—	—	—	—	—	—	—	—
25	15	30	M26 x 1.5	<b>25</b>	87	136	145	112	161	170	137	186	195	—	—	—	—	—	—	—	—
32	15	34.5	M26 x 1.5	<b>32</b>	89	138	147	114	163	172	139	188	197	164	213	222	—	—	—	—	—
40	21.5	42.5	M32 x 2	<b>40</b>	113	168	179	138	193	204	163	218	229	188	243	254	213	268	279	—	—

Bore size (mm)	N	NA	NN	Stroke			1 to 50			51 to 100			101 to 150			151 to 200			201 to 250		
				Symbol	S	Z	ZZ	S	Z	ZZ	S	Z	ZZ	S	Z	ZZ	S	Z	ZZ	S	Z
20	15	24	M20 x 1.5	<b>20</b>	87	132	141	112	157	166	137	182	191	—	—	—	—	—	—	—	—
25	15	30	M26 x 1.5	<b>25</b>	87	136	145	112	161	170	137	186	195	—	—	—	—	—	—	—	—
32	15	34.5	M26 x 1.5	<b>32</b>	89	138	147	114	163	172	139	188	197	164	213	222	—	—	—	—	—
40	21.5	42.5	M32 x 2	<b>40</b>	113	168	179	138	193	204	163	218	229	188	243	254	213	268	279	—	—

### Single Acting/Spring Extend

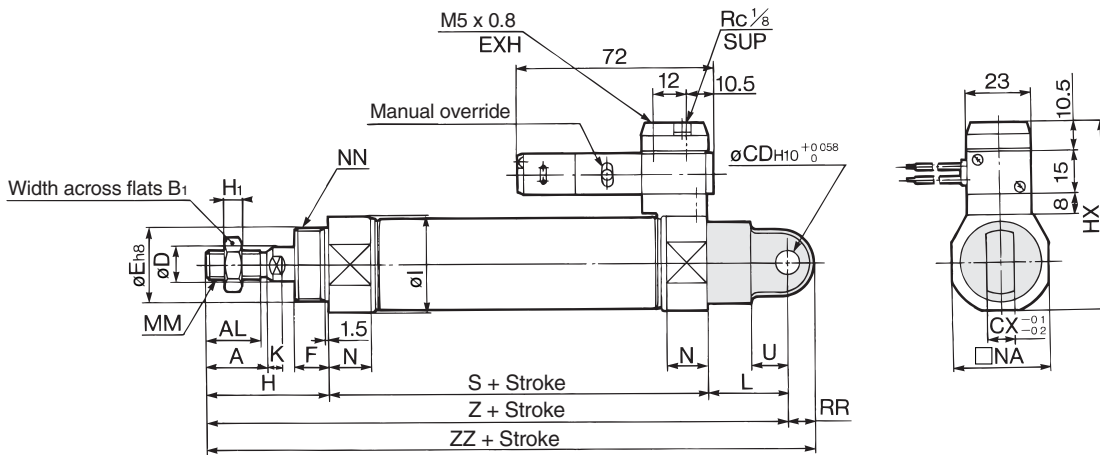
Bore size (mm)	HX	Q	QY
20	65.3	19.8	14
25	70.5	22	14
32	76.5	25.8	16
40	84.5	29.8	16

- RE<sup>A</sup><sub>B</sub>
- REC
- C□X
- C□Y
- MQ<sup>Q</sup><sub>M</sub>
- RHC
- MK(2)
- RS<sup>Q</sup><sub>G</sub>
- RS<sup>H</sup><sub>A</sub>
- RZQ
- MI<sup>W</sup><sub>S</sub>
- CEP1
- CE1
- CE2
- ML2B
- C<sup>1</sup><sub>5-S</sub>
- CV
- MVGQ
- CC
- RB
- J
- D-
- X
- 20-
- Data

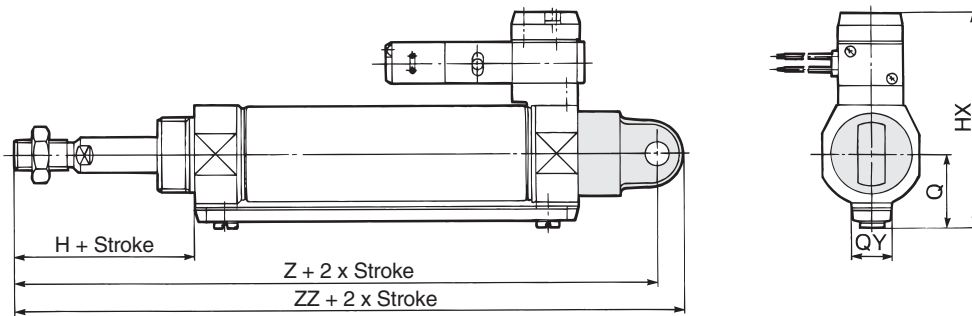
# Series CVM3

## Single Clevis Style (C)

Single acting, Spring return: CVM3C **Bore size** — **Stroke** S



Single acting, Spring extend: CVM3C **Bore size** — **Stroke** T



Bore size (mm)	A	AL	B <sub>1</sub>	CD	CX	D	Eh <sub>s</sub>	F	H	H <sub>1</sub>	HX	I	K	L	MM	N	NA	NN	RR	U
20	18	15.5	13	9	10	8	20 <sup>0</sup> <sub>-0.033</sub>	13	41	5	57.5	28	5	30	M8 x 1.25	15	24	M20 x 1.5	9	14
25	22	19.5	17	9	10	10	26 <sup>0</sup> <sub>-0.033</sub>	13	45	6	63.5	33.5	5.5	30	M10 x 1.25	15	30	M26 x 1.5	9	14
32	22	19.5	17	9	10	12	26 <sup>0</sup> <sub>-0.033</sub>	13	45	6	68	37.5	5.5	30	M10 x 1.25	15	34.5	M26 x 1.5	9	14
40	24	21	22	10	15	14	32 <sup>0</sup> <sub>-0.039</sub>	16	50	8	76	46.5	7	39	M14 x 1.5	21.5	42.5	M32 x 2	11	18

### Dimensions by Stroke

Bore size (mm)	1 to 50			51 to 100			101 to 150			151 to 200			201 to 250		
	S	Z	ZZ	S	Z	ZZ	S	Z	ZZ	S	Z	ZZ	S	Z	ZZ
20	87	158	167	112	183	192	137	208	217	—	—	—	—	—	—
25	87	162	171	112	187	196	137	212	221	—	—	—	—	—	—
32	89	164	173	114	189	198	139	214	223	164	239	248	—	—	—
40	113	202	213	138	227	238	163	252	263	188	277	288	213	302	313

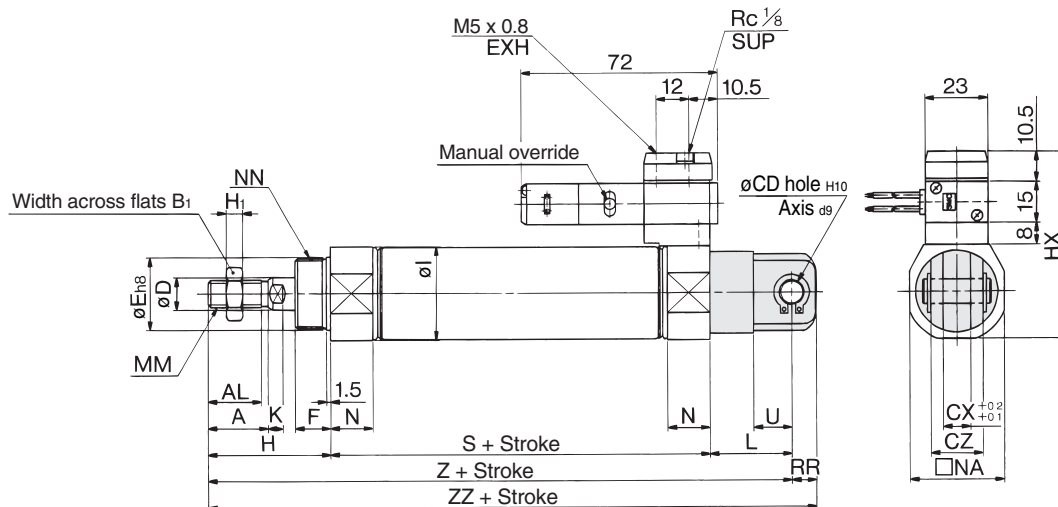
### Single Acting/Spring Extend

Bore size (mm)	HX	Q	QY
20	65.3	19.8	14
25	70.5	22	14
32	76.5	25.8	16
40	84.5	29.8	16

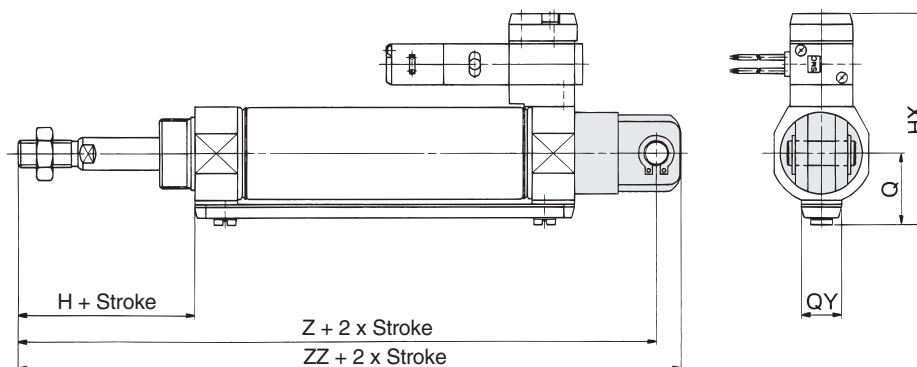
# Valve Mounted Cylinder Single Acting, Single Rod, Spring Return/Extend **Series CVM3**

## Double Clevis Style (D)

Single acting, Spring return: CVM3D Bore size Stroke S



Single acting, Spring extend: CVM3D Bore size Stroke T



Bore size (mm)	A	AL	B <sub>1</sub>	CD	CX	CZ	D	Eh <sub>8</sub>	F	H	H <sub>i</sub>	HX	I	K	L	MM	N	NA	NN	RR	U
20	18	15.5	13	9	10	19	8	20 <sup>0</sup> <sub>-0.033</sub>	13	41	5	57.5	28	5	30	M8 x 1.25	15	24	M20 x 1.5	9	14
25	22	19.5	17	9	10	19	10	26 <sup>0</sup> <sub>-0.033</sub>	13	45	6	63.5	33.5	5.5	30	M10 x 1.25	15	30	M26 x 1.5	9	14
32	22	19.5	17	9	10	19	12	26 <sup>0</sup> <sub>-0.033</sub>	13	45	6	68	37.5	5.5	30	M10 x 1.25	15	34.5	M26 x 1.5	9	14
40	24	21	22	10	15	30	14	32 <sup>0</sup> <sub>-0.039</sub>	16	50	8	76	46.5	7	39	M14 x 1.5	21.5	42.5	M32 x 2	11	18

### Dimensions by Stroke

Bore size (mm)	Stroke Symbol			1 to 50			51 to 100			101 to 150			151 to 200			201 to 250		
	S	Z	ZZ	S	Z	ZZ	S	Z	ZZ	S	Z	ZZ	S	Z	ZZ	S	Z	ZZ
20	87	158	167	112	183	192	137	208	217	—	—	—	—	—	—	—	—	—
25	87	162	171	112	187	196	137	212	221	—	—	—	—	—	—	—	—	—
32	89	164	173	114	189	198	139	214	223	164	239	248	—	—	—	—	—	—
40	113	202	213	138	227	238	163	252	263	188	277	288	213	302	313	—	—	—

### Single Acting/Spring Extend

Bore size (mm)	HX	Q	QY
20	65.3	19.8	14
25	70.5	22	14
32	76.5	25.8	16
40	84.5	29.8	16

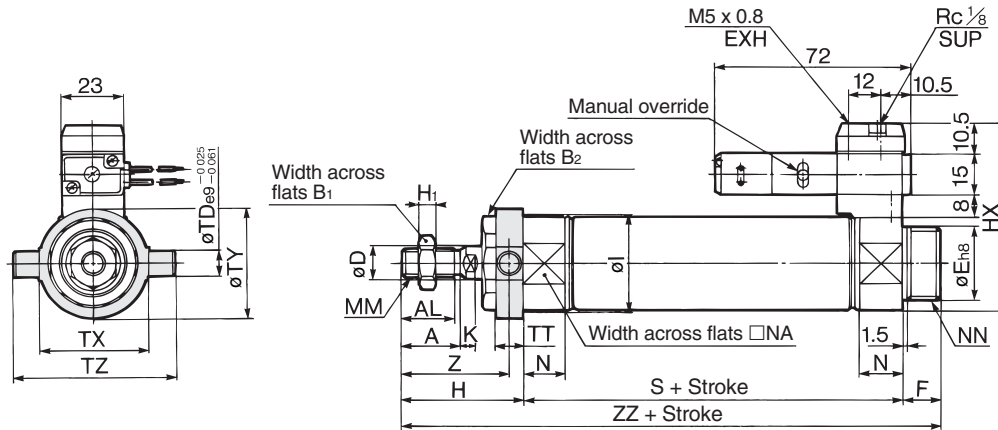
\* Clevis pin and snap ring (cotter pin for ø40) is shipped together.

- RE<sup>A</sup><sub>B</sub>
- REC
- C□X
- C□Y
- MQ<sup>Q</sup><sub>M</sub>
- RHC
- MK(2)
- RS<sup>Q</sup><sub>G</sub>
- RS<sup>H</sup><sub>A</sub>
- RZQ
- MI<sup>W</sup><sub>S</sub>
- CEP1
- CE1
- CE2
- ML2B
- C<sup>1</sup><sub>5-S</sub>
- CV**
- MVGQ
- CC
- RB
- J
- D-
- X
- 20-
- Data

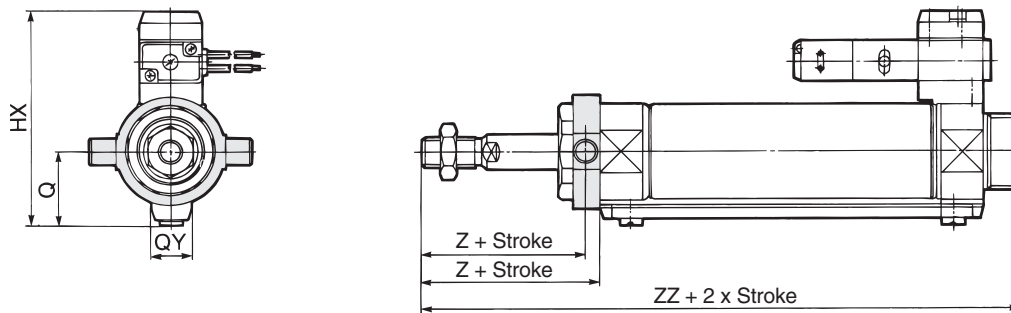
# Series CVM3

## Rod Side Trunnion Style (U)

Single acting, Spring return: CVM3U **Bore size** **Stroke S**



Single acting, Spring extend: CVM3U **Bore size** **Stroke T**



Bore size (mm)	A	AL	B <sub>1</sub>	B <sub>2</sub>	D	Eh <sub>8</sub>	F	H	H <sub>1</sub>	HX	I	K	MM	N	NA	NN	TD	TT	TX	TY	TZ	Z
20	18	15.5	13	26	8	20 <sup>0</sup> <sub>-0.033</sub>	13	41	5	57.5	28	5	M8 x 1.25	15	24	M20 x 1.5	8	10	32	32	52	36
25	22	19.5	17	32	10	26 <sup>0</sup> <sub>-0.033</sub>	13	45	6	63.5	33.5	5.5	M10 x 1.25	15	30	M26 x 1.5	9	10	40	40	60	40
32	22	19.5	17	32	12	26 <sup>0</sup> <sub>-0.033</sub>	13	45	6	68	37.5	5.5	M10 x 1.25	15	34.5	M26 x 1.5	9	10	40	40	60	40
40	24	21	22	41	14	32 <sup>0</sup> <sub>-0.039</sub>	16	50	8	76	46.5	7	M14 x 1.5	21.5	42.5	M32 x 2	10	11	53	53	77	44.5

### Dimensions by Stroke

Bore (mm)	Stroke Symbol		1 to 50		51 to 100		101 to 150		151 to 200		201 to 250	
	S	ZZ	S	ZZ	S	ZZ	S	ZZ	S	ZZ	S	ZZ
20	87	141	112	166	137	191	—	—	—	—	—	—
25	87	145	112	170	137	195	—	—	—	—	—	—
32	89	147	114	172	139	197	164	222	—	—	—	—
40	113	179	138	204	163	229	188	254	213	279	—	—

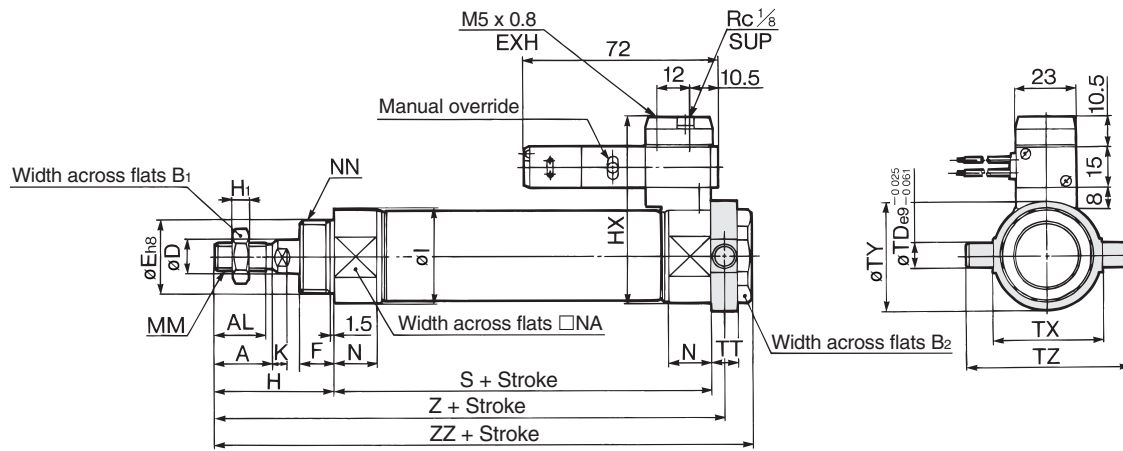
### Single Acting/Spring Extend

Bore size	HX	Q	QY
20	65.3	19.8	14
25	70.5	22	14
32	76.5	25.8	16
40	84.5	29.8	16

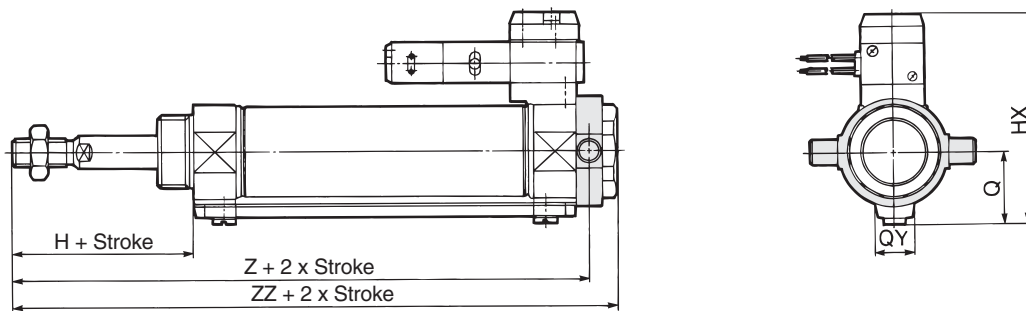
# Valve Mounted Cylinder Single Acting, Single Rod, Spring Return/Extend **Series CVM3**

## Head Side Trunnion Style (T)

Single acting, Spring return: CVM3T Bore size Stroke S



Single acting, Spring extend: CVM3T Bore size Stroke T



Bore size (mm)	A	AL	B <sub>1</sub>	B <sub>2</sub>	D	Eh <sub>8</sub>	F	H	H <sub>1</sub>	HX	I	K	MM	N	NA	NN	TD	TT	TX	TY	TZ
20	18	15.5	13	26	8	20 <sup>0</sup> <sub>-0.033</sub>	13	41	5	57.5	28	5	M8 x 1.25	15	24	M20 x 1.5	8	10	32	32	52
25	22	19.5	17	32	10	26 <sup>0</sup> <sub>-0.033</sub>	13	45	6	63.5	33.5	5.5	M10 x 1.25	15	30	M26 x 1.5	9	10	40	40	60
32	22	19.5	17	32	12	26 <sup>0</sup> <sub>-0.033</sub>	13	45	6	68	37.5	5.5	M10 x 1.25	15	34.5	M26 x 1.5	9	10	40	40	60
40	24	21	22	41	14	32 <sup>0</sup> <sub>-0.039</sub>	16	50	8	76	46.5	7	M14 x 1.5	21.5	42.5	M32 x 2	10	11	53	53	77

### Dimensions by Stroke

Bore size (mm)	1 to 50			51 to 100			101 to 150			151 to 200			201 to 250		
	S	Z	ZZ	S	Z	ZZ	S	Z	ZZ	S	Z	ZZ	S	Z	ZZ
20	87	133	143	112	158	168	137	183	193	—	—	—	—	—	—
25	87	137	147	112	162	172	137	187	197	—	—	—	—	—	—
32	89	139	149	114	164	174	139	189	199	164	214	224	—	—	—
40	113	168.5	179	138	193.5	204	163	218.5	229	188	243.5	254	213	268.5	279

### Single Acting/Spring Extend

Bore size (mm)	HX	Q	QY
20	65.3	19.8	14
25	70.5	22	14
32	76.5	25.8	16
40	84.5	29.8	16

RE<sup>A</sup><sub>B</sub>

REC

C□X

C□Y

MQ<sup>Q</sup><sub>M</sub>

RHC

MK(2)

RS<sup>Q</sup><sub>G</sub>

RS<sup>H</sup><sub>A</sub>

RZQ

MI<sup>W</sup><sub>S</sub>

CEP1

CE1

CE2

ML2B

C<sup>1</sup>/<sub>5</sub>-S

**CV**

MVGQ

CC

RB

J

D-

-X

20-

Data