

Compact Cylinder With Solenoid Valve Series **CVQ**

ø32, ø40, ø50, ø63



How to Order

CVQ B 32 - 30 - M9BW - 5 M

Mounting

B	Through-hole, Both ends tapped (Standard)
L	Foot
F	Rod flange
G	Head flange
D	Double clevis

* Mounting brackets are included, (but not assembled).

Bore size

32	32 mm
40	40 mm
50	50 mm
63	63 mm

Cylinder stroke (mm)

Please refer to the next page for "Standard Stroke" and "Intermediate Stroke".

Body option

Nil	Standard (Rod end female thread)
F	With boss in head end
M	Rod end male thread

The combination of body options is available.
Example) FM

Auto switch

Nil	Without auto switch (Built-in magnet)
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* For applicable auto switch models, refer to the below table.

Number of auto switches

Nil	2 pcs.
S	1 pc.
N	"n" pcs.

Rated voltage

5	24 VDC
6	12 VDC

Port thread type

Nil	M5 x 0.8	ø32 ø40
	Rc	
F	G	ø50
N	NPT	ø63

Piping

Nil	Standard
P	Axial

Standard piping
Axial piping

Manual override



Nil	Non-locking push type
B	Locking slotted type

Surge voltage suppressor

Nil	Without surge voltage suppressor
S	With surge voltage suppressor
Z	With light/surge voltage suppressor
R	With surge voltage suppressor (Non-polar type)
U	With light/surge voltage suppressor (Non-polar type)

Electrical entry

M	MO
M-type plug connector with lead wire (300 mm)	M-type plug connector without connector

* For lead wire lengths other than 300 mm, refer to the plug connector lead wire (page 5).

Applicable Auto Switches / Refer to pages 14 through to 16 for detailed auto switch specifications.

Type	Special function	Electrical entry	Indicator light	Wiring (Output)	Load voltage			Auto switch model		Lead wire length (m)*				Pre-wired connector	Applicable load		
					DC		AC	Electrical entry		0.5 (Nil)	1 (M)	3 (L)	5 (Z)				
								Perpendicular	In-line								
Solid state switch	— Diagnostic indication (2-color indication)	Grommet	Yes	3-wire (NPN)	24 V	5V, 12V	—	M9NV	M9N	●	●	●	○	○	IC circuit	Relay, PLC	
				3-wire (PNP)				M9PV	M9P	●	●	●	○	○			
				2-wire				M9BV	M9B	●	●	●	○	○			
				3-wire (NPN)	5V, 12V			M9NWW	M9NW	●	●	●	○	○	IC circuit		
				3-wire (PNP)				M9PWW	M9PW	●	●	●	○	○			
				2-wire				M9BWW	M9BW	●	●	●	○	○			—
	Reed switch	—	Grommet	Yes	3-wire (NPN equivalent)	—	5 V	—	A96V	A96	●	—	●	—	—	IC circuit	—
2-wire					24 V	12 V	100 V	A93V	A93	●	—	●	—	—	IC circuit	Relay, PLC	
						5 V, 12 V	100 V or less	A90V	A90	●	—	●	—	—			

* Lead wire length symbols: 0.5 m Nil (Example) M9NW
 1 m M M9NWM
 3 m L M9NWL
 5 m Z M9NWX

* Solid state auto switches marked with "○" are produced upon receipt of order.
 * For details about auto switches with pre-wired connector, refer to pages 1784 and 1785 of the "Best Pneumatics" Vol. 3 catalog.
 * Auto switches are shipped together (not assembled).

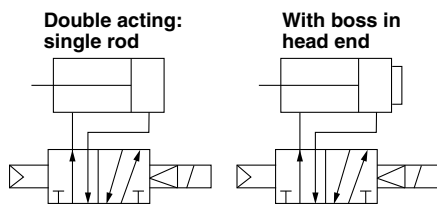
Series CVQ



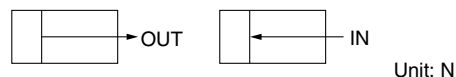
⚠ Caution

Do not separate the cylinder from the valve.

JIS Symbol



Theoretical Output



Unit: N

Bore size (mm)	Operating direction	Operating pressure (MPa)		
		0.3	0.5	0.7
32	IN	181	302	422
	OUT	241	402	563
40	IN	317	528	739
	OUT	377	628	880
50	IN	495	825	1150
	OUT	589	982	1370
63	IN	840	1400	1960
	OUT	936	1560	2184

Mounting Bracket Part No.

Bore size (mm)	Foot (Note)	Flange	Double clevis
32	CVQ-L032	CVQ-F032	CVQ-D032
40	CVQ-L040	CVQ-F040	CVQ-D040
50	CVQ-L050	CVQ-F050	CVQ-D050
63	CVQ-L063	CVQ-F063	CVQ-D063

Note) Order two foot brackets per cylinder.

* Parts belonging to each bracket are as follows.

Foot, Flange: Body mounting screws

Double clevis: Clevis pin, C-type retaining ring for shaft, Body mounting screws

Cylinder Specifications

Bore size (mm)	32	40	50	63
Action	Double acting, single rod			
Fluid	Air (Non-lube)			
Proof pressure	1.0 MPa			
Maximum operating pressure	0.7 MPa			
Minimum operating pressure	0.15 MPa			
Ambient and fluid temperature	-10 to 50°C (No freezing)			
Stroke tolerance	0 to +1.0 mm*			
Mounting method	Through-hole / Both ends tapped			
Piston speed	50 to 500 mm/s			
Cushion	Rubber bumper			

* Stroke length tolerance does not include variations in the bumper value.

Valve Specifications

Type of actuation	2 position single
Manual override	Non-locking push type / Locking slotted type
Pilot exhaust	Main/Pilot valve common exhaust type
Mounting orientation	Unrestricted (based on cylinder mounting orientation)
Enclosure	Dustproof

Solenoid Specifications

Electrical entry	M-type plug connector	
Coil rated voltage	DC	24/12 (V)
Allowable voltage fluctuation (Note)	±10% of the rated voltage	
Power consumption	DC	0.35 (With light: 0.4) W
Surge voltage suppressor	Diode (Non-polar type: Varistor)	
Indicator light	LED	

Note) The S and Z types of surge voltage suppressor have an internal circuit allowing voltage drop, so use within the following allowable voltage fluctuation range.

S, Z type 24 VDC: -7% to +10%

12 VDC: -4% to +10%

Standard Stroke

Bore size (mm)	Standard stroke (mm)
32 *1	5, 10, 15, 20, 25, 30, 35, 40, 45, 50, 75, 100
40	5, 10, 15, 20, 25, 30, 35, 40, 45, 50, 75, 100
50 *2	10, 15, 20, 25, 30, 35, 40, 45, 50, 75, 100
63	10, 15, 20, 25, 30, 35, 40, 45, 50, 75, 100

*1 The outline dimensions for 5 mm stroke will be the same as those for 10 mm stroke.

*2 The outline dimensions for 10 mm stroke will be the same as those for 15 mm stroke.

Intermediate Stroke

Part no.	Refer to "How to Order" for standard model numbers (previous page).	
Description	Intermediate strokes are available by using spacers with standard stroke cylinders.	
	Bore size	Description
	32	Compatible with strokes of 1 mm increments.
	40, 50, 63	Compatible with strokes of 5 mm increments.
Stroke range (mm)	Bore size	Stroke range
	32	1 to 99
	40, 50, 63	5 to 95
Applicable example	Part no.: CVQB32-95-□ A spacer of 5 mm is installed in standard cylinder CVQB32-100-□. B dimension is 133 mm.	

Weight

Weights

Bore size (mm)	Stroke												Unit (g)
	5	10	15	20	25	30	35	40	45	50	75	100	
32	295	288	310	332	354	376	398	420	442	464	575	686	
40	365	391	417	443	469	495	521	547	573	599	726	853	
50	—	735	721	760	800	839	879	918	958	997	1195	1392	
63	—	863	905	947	990	1032	1074	1116	1158	1200	1411	1621	

Calculation: (Example) **CVQB32-20M**

- Basic moving part weight: CVQB32-20 88 g
 - Additional weight: Rod end male thread 43 g
- 131 g

Additional Weight

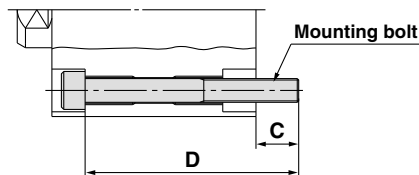
Bore size (mm)	32	40	50	63
Axial piping	5	5	4	4
Connector (300 mm)	3	3	3	3
Rod end male thread	Male thread	26	27	53
	Nut	17	17	32
With boss in head end	5	7	13	25
Foot (including mounting bolt)	148	160	243	334
Rod flange (including mounting bolt)	185	219	373	569
Head flange (including mounting bolt)	170	203	348	544
Double clevis (including pin, retaining ring, bolt)	156	201	399	574

Mounting Bolt for CVQ

Mounting: Be sure to use it as through-hole when mounting.

Ordering: Add the word, "Bolt" in front of the bolts to be used.

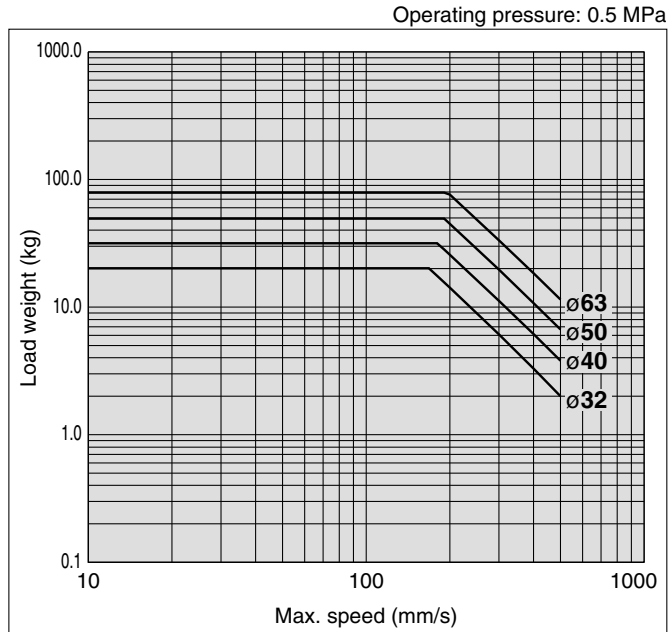
Example) Bolt M5 x 45L: 4 pcs.



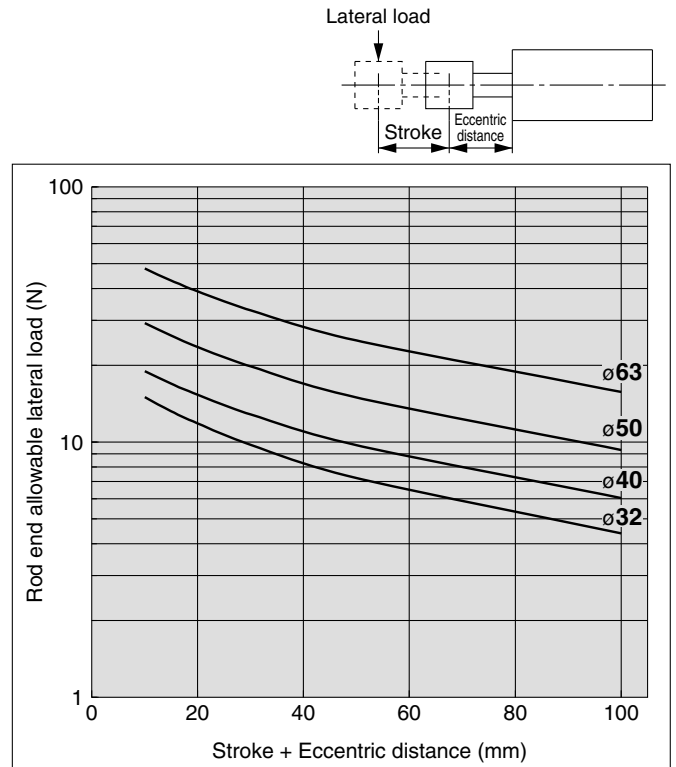
Cylinder model	C	D	Mounting bolt size
CVQB32- 5	9	45	M5 x 45L
- 10		45	x 45L
- 15		50	x 50L
- 20		55	x 55L
- 25		60	x 60L
- 30		65	x 65L
- 35		70	x 70L
- 40		75	x 75L
- 45		80	x 80L
- 50		85	x 85L
- 75		110	x 110L
-100		135	x 135L
CVQB40- 5	7.5	45	M5 x 45L
- 10		50	x 50L
- 15		55	x 55L
- 20		60	x 60L
- 25		65	x 65L
- 30		70	x 70L
- 35		75	x 75L
- 40		80	x 80L
- 45		85	x 85L
- 50		90	x 90L
- 75		115	x 115L
-100		140	x 140L

Cylinder model	C	D	Mounting bolt size
CVQB50- 10	12.5	60	M6 x 60L
- 15		60	x 60L
- 20		65	x 65L
- 25		70	x 70L
- 30		75	x 75L
- 35		80	x 80L
- 40		85	x 85L
- 45		90	x 90L
- 50		95	x 95L
- 75		120	x 120L
-100		145	x 145L
CVQB63- 10	14.5	60	M8 x 60L
- 15		65	x 65L
- 20		70	x 70L
- 25		75	x 75L
- 30		80	x 80L
- 35		85	x 85L
- 40		90	x 90L
- 45		95	x 95L
- 50		100	x 100L
- 75		125	x 125L
-100		150	x 150L

Allowable Kinetic Energy



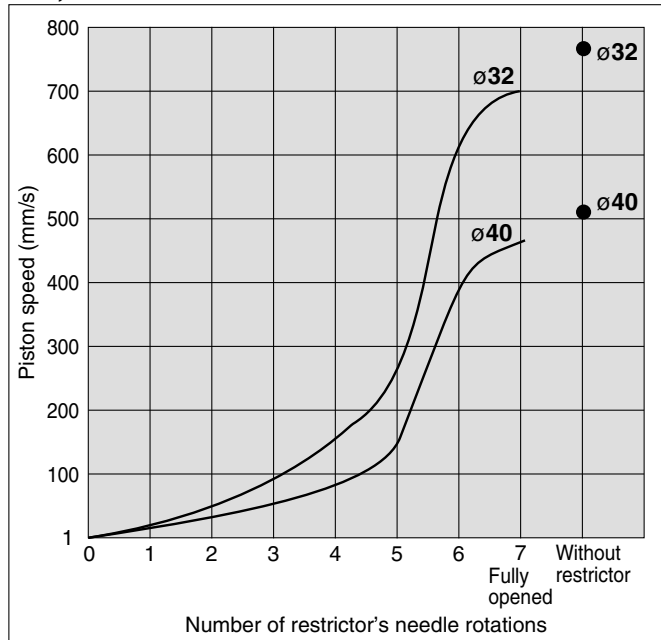
Rod End Allowable Lateral Load



The allowable lateral load applied to the rod end is as shown above. Do not use exceeding the value shown by the graph.

Relationship between Number of Needle Rotations and Piston Speed

ø32, ø40



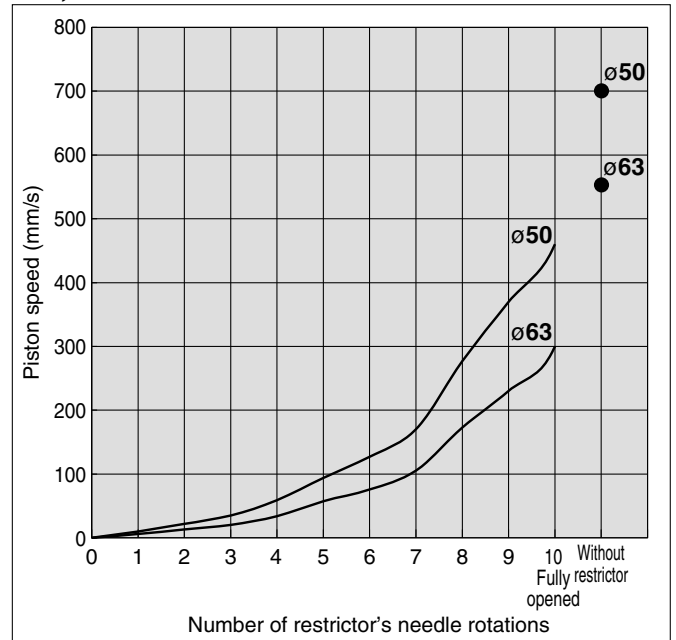
Restrictor: ASN2-M5

Pressure: 0.5 MPa

Mounting orientation: Horizontal, with no load, piston extended

* The above piston speed is for reference purpose only.

ø50, ø63



Restrictor: ASN2-01

Pressure: 0.5 MPa

Mounting orientation: Horizontal, with no load, piston extended

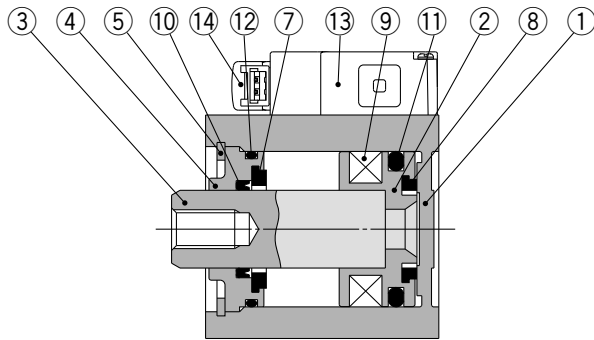
* The above piston speed is for reference purpose only.

<Exhaust restrictor with silencer>



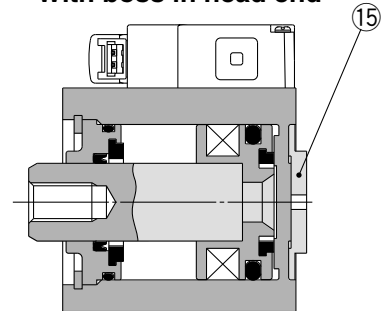
Applicable bore size (mm)	Model	Port size	Effective area (mm ²)	Weight (g)
32, 40	ASN2-M5	M5 x 0.8	1.8	5
50, 63	ASN2-01	1/8	3.6	17

Construction



Basic Type

With boss in head end



Component Parts

No.	Description	Material	Note
1	Cylinder tube	Aluminum alloy	Hard anodized
2	Piston	Aluminum alloy	Chromated
3	Piston rod	Carbon steel	Hard chrome plated
4	Collar	Aluminum alloy casting	ø50, ø63, chromate coating
		Aluminum alloy	Anodized
5	Retaining ring	Carbon tool steel	Phosphate coated
6	Bushing	Bearing alloy	ø50, ø63
7	Bumper A	Urethane	
8	Bumper B	Urethane	
9	Magnet	—	
10	Rod seal	NBR	
11	Piston seal	NBR	
12	Gasket	NBR	
13	Solenoid valve	—	
14	Pilot valve	—	
15	Boss ring	Aluminum alloy	Hard anodized
16	Rod end nut	Carbon steel	Nickel plated

Replacement parts: Seal Kit

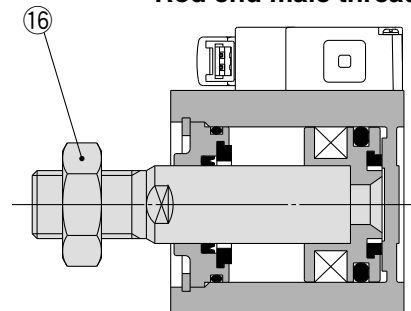
Bore size	Order no.	Contents
32	CQ2B32-PS	Set of nos. above ⑩⑪⑫
40	CQ2B40-PS	
50	CQ2B50-PS	
63	CQ2B63-PS	

* Seal kit includes ⑩, ⑪, ⑫. Order the seal kit, based on each bore size.

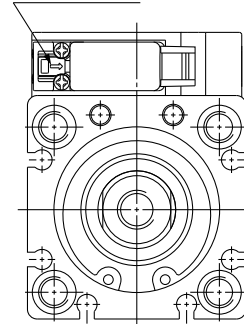
* Grease pack must be ordered separately as it is not included in the seal kit.

Grease part no.: GR-S-010 (10 g)

Rod end male thread



Manual button



Length of plug connector lead wire

The standard length of the plug connector with a lead wire is 300 mm, but other lengths are available as follows.

How to Order Pilot Valve Assembly

V111M-□□□□

Rated voltage

5	24 VDC
6	12 VDC

Manual override

Nil	Non-locking push type
B	Locking slotted type

Surge voltage suppressor

Nil	Without light/surge voltage suppressor
S	With surge voltage suppressor
Z	With light/surge voltage suppressor
R	With surge voltage suppressor (Non-polar type)
U	With light/surge voltage suppressor (Non-polar type)

Electrical entry

M	M-type plug connector with lead wire (Lead wire length 300 mm)
MO	M-type plug connector without connector

How to Order Connector Assembly

With lead wire: SY100-30-4A-□

Lead wire length

Nil	300 mm	20	2000 mm
6	600 mm	25	2500 mm
10	1000 mm	30	3000 mm
15	1500 mm	50	5000 mm

How to Order

Indicate the part number of the connector assembly in addition to the part number of the solenoid valve without the connector for the plug connector.
Example) Lead wire length 2000 mm

When ordering cylinder with valve
CVQB32-30-M9B-5MOZ
SY100-30-4A-20