

# Series CA2

## Weight/Aluminum Tube (Steel tube)

Bore size (mm)		(kg)					
		40	50	63	80	100	
Basic weight	Basic style	Aluminum tube	0.86	1.29	1.84	3.10	4.18
		Steel tube	0.92	1.35	1.93	3.30	4.45
	Axial foot style	Aluminum tube	1.05	1.51	2.18	3.77	5.17
		Steel tube	1.11	1.57	2.27	3.97	5.44
	Flange style	Aluminum tube	1.23	1.74	2.63	4.55	6.10
		Steel tube	1.29	1.80	2.72	4.75	6.37
	Single clevis style	Aluminum tube	1.09	1.63	2.47	4.21	5.96
		Steel tube	1.15	1.69	2.56	4.41	6.23
	Single clevis style	Aluminum tube	1.13	1.72	2.63	4.50	6.48
		Steel tube	1.19	1.78	2.72	4.70	6.75
	Trunnion style	Aluminum tube	1.22	1.77	2.64	4.65	6.46
		Steel tube	1.28	1.83	2.73	4.85	6.73
Add'l weight by each 50 mm stroke	All mounting brackets	Aluminum tube	0.20	0.25	0.31	0.46	0.58
		Steel tube	0.28	0.35	0.43	0.70	0.87
Accessory	Single knuckle		0.23	0.26	0.26	0.60	0.83
	Double knuckle (With pin)		0.37	0.43	0.43	0.87	1.27

Calculation: (Example) CA2L40-100 (Axial foot style,  $\phi 40$ , 100<sup>st</sup>)

- Basic weight..... 1.05 kg
- Additional weight..... 0.20/50<sup>st</sup>
- Cylinder stroke..... 100<sup>st</sup>

$$1.05 + 0.20 \times 100 / 50 = 1.45 \text{ kg}$$

## Auto Switch Mounting Bracket Part No.

Auto switch model	Bore size (mm)				
	40	50	63	80	100
D-A5□/A6□ D-A59W D-F5□/J5□ D-F5□W/J59W D-F5□F/F5NTL	BT-04	BT-04	BT-06	BT-08	BT-08
D-A3□/A44 *** D-G39/K39 ***	BDS-04M	BDS-05M	BMBI-063	BMBI-080	BMBI-100
D-B5□/B64 *** D-B59W *** D-G5□/K59 *** D-G5□W/K59W *** D-G59F *** D-G5NTL ***	BH2-040	BA5-050	BAF-06	BAF-08	BAF-10
D-A3□C/A44C * D-G39C/K39C *	BA3-040	BA3-050	BA3-063	BA3-080	BA3-100
D-Z7□/Z80 D-Y59□/Y69□ D-Y7P/Y7PV D-Y7□W D-Y7□WV D-Y7BAL	BA4-040	BA4-040	BA4-063	BA4-080	BA4-080
D-P5DWL	BAP2-040	BAP2-040	BAP2-063	BAP2-080	BAP2-080

\* Mounting brackets are attached to models D-A3□C/A44C/G39C/K39C.

When placing an order, indicate one of the following part numbers according to the cylinder size.

(Example)  $\phi 40$ ...D-A3□C-4,  $\phi 63$ ...D-A3□C-6,  $\phi 100$ ...D-A3□C-10  
 $\phi 50$ ...D-A3□C-5,  $\phi 80$ ...D-A3□C-8

When other brackets are ordered separately, order by the above part numbers.

\*\* Stainless steel mounting screw kit

The following stainless steel mounting screw kits (including set screws) are available if the operating environment requires. (The mounting bracket and band are not included and must be ordered separately.)

BBA1: D-A5/A6/F5/J5

BBA3: D-B5/B6/G5/K5

When a switch model D-F5BAL or G5BAL is mounted on the cylinder at the time of shipment, the above stainless steel screws are used. When the switch is shipped alone, BBA1 or BBA3 is attached.

\*\*\* Series CDA2 models vary in the thickness of the cylinder tube wall. In cases where the band mount type is used as an applicable auto switch, select the part number of the new band referring to page 6-8-71 whenever the cylinder model is changed.

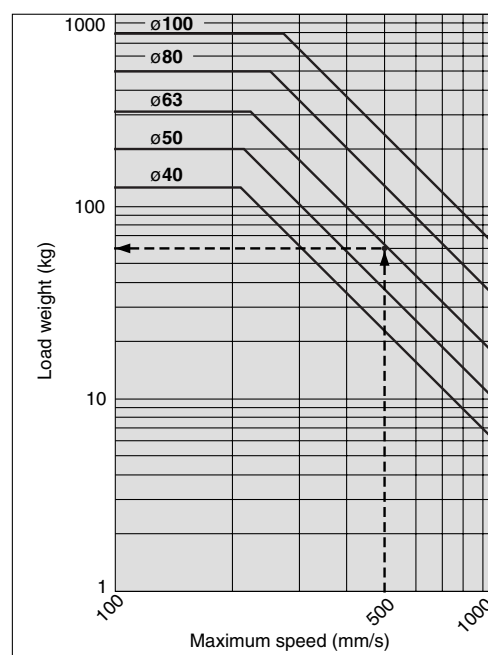
## Mounting Bracket

Bore size (mm)	40	50	63	80	100
Axial foot*	CA2-L04	CA2-L05	CA2-L06	CA2-L08	CA2-L10
Flange	CA2-F04	CA2-F05	CA2-F06	CA2-F08	CA2-F10
Single clevis	CA2-C04	CA2-C05	CA2-C06	CA2-C08	CA2-C10
Double clevis**	CA2-D04	CA2-D05	CA2-D06	CA2-D08	CA2-D10

\* When axial foot brackets are used, two pieces should be ordered for each cylinder.

\*\* Double clevis type is packed with clevis pin, flat washer and cotter pin.

## Allowable Kinetic Energy



(Example) Find the upper limit of rod end load when an air cylinder of  $\phi 63$  is operated at 500 mm/s. From a point indicating 500 mm/s on the axis of abscissas, extend a line upward and find a point where it intersects with a line for the 63 mm bore size. Extend a line from the intersection to the left and find a load weight 60 kg.

# Series CA2□Q

## Weight/Aluminum Tube (Steel tube)

		(kg)				
Bore size (mm)		40	50	63	80	100
Basic weight	Basic style	0.89 (0.94)	1.36 (1.40)	2.00 (2.04)	3.48 (3.63)	4.87 (5.07)
	Axial foot style	1.08 (1.13)	1.58 (1.62)	2.34 (2.38)	4.15 (4.30)	5.86 (6.06)
	Flange style	1.26 (1.30)	1.81 (1.86)	2.79 (2.84)	4.93 (5.08)	6.79 (6.99)
	Single clevis style	1.12 (1.17)	1.70 (1.74)	2.63 (2.67)	4.59 (4.74)	6.65 (6.86)
	Double clevis style	1.16 (1.21)	1.79 (1.83)	2.79 (2.83)	4.88 (5.03)	7.17 (7.38)
	Trunnion style	1.25 (1.35)	1.84 (1.94)	2.80 (3.00)	5.03 (5.32)	7.15 (7.54)
	Additional weight per each 50 mm stroke	0.22 (0.28)	0.28 (0.35)	0.37 (0.43)	0.52 (0.70)	0.65 (0.87)
Accessory	Single knuckle	0.23	0.26	0.26	0.60	0.83
	Double knuckle (with pin)	0.37	0.43	0.43	0.87	1.27

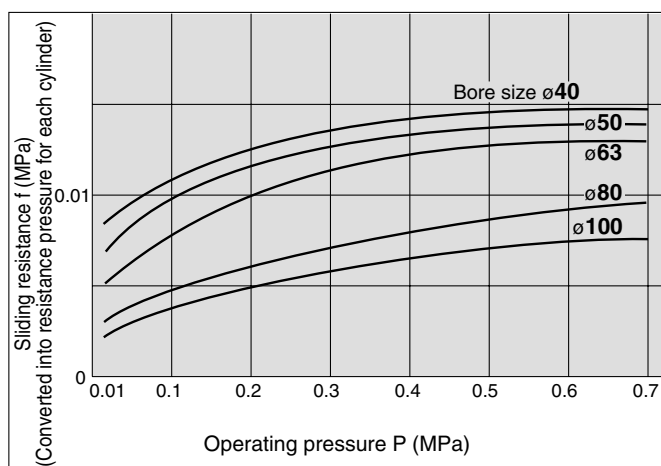
Calculation: (Example) CA2LQ40-100F (Axial foot style, ø40, 100<sup>st</sup>)

- Basic weight ..... 1.08kg
- Additional weight ..... 0.22/50<sup>st</sup>
- Cylinder stroke ..... 100<sup>st</sup>

$$1.08 + 0.22 \times 100/50 = 1.52 \text{ kg}$$

\* Values inside the parentheses are those for the steel tube type.

## Sliding Resistance of the Low Friction Side



The actual sliding resistance  $F$  (N) can be found by the following equation from the sliding resistance  $f$  (MPa) (converted into resistance pressure of each cylinder) indicated by the ordinate of the graph.

$$\text{Sliding resistance } F \text{ (N)} = \text{Sliding resistance } f \text{ (MPa)} \times \text{Rod side piston area (mm}^2\text{)}$$

(Example) When a low friction cylinder with a bore size 63 mm is operated at 0.2 MPa, the sliding resistance  $f$  (MPa), a converted value of the actual sliding resistance into the cylinder pressure, is found to be 0.01 MPa in the graph. Thus, the actual sliding resistance

$$F \text{ (N)} = 0.01 \text{ (MPa)} \times 2800 \text{ (mm}^2\text{)} = 28 \text{ (N)}$$

## Mounting Bracket

Bore size (mm)	40	50	63	80	100
Axial foot*	CA2-L04	CA2-L05	CA2-L06	CA2-L08	CA2-L10
Flange	CA2-F04	CA2-F05	CA2-F06	CA2-F08	CA2-F10
Single clevis	CA2-C04	CA2-C05	CA2-C06	CA2-C08	CA2-C10
Double clevis**	CA2-D04	CA2-D05	CA2-D06	CA2-D08	CA2-D10

\* When axial foot brackets are used, two pieces should be ordered for each cylinder.

\*\* Double clevis type is packed with clevis pin, flat washer and cotter pin.

## Auto Switch Mounting Bracket Part No.

Auto switch model	Bore size (mm)				
	40	50	63	80	100
D-A5□/A6□ D-A59W D-F5□/J5□ D-F5□W/J59W D-F59F/F5NTL	BT-04	BT-04	BT-06	BT-08	BT-08
D-A3□/A44 *** D-G39/K39 ***	BD1-04M	BD1-05M	BD1-06M	BD1-08M	BD1-10M
D-B5□/B64 *** D-B59W *** D-G5□/K59 *** D-G5□W/K59W *** D-G59F *** D-G5NTL ***	BA-04	BA-05	BA-06	BA-08	BA-10
D-A3□C/A44C * D-G39C/K39C *	BA3-040	BA3-050	BA3-063	BA3-080	BA3-100
D-Z7□/Z80 D-Y59□/Y69□ D-Y7P/Y7PV D-Y7□W D-Y7□WV D-Y7BAL	BA4-040	BA4-040	BA4-063	BA4-080	BA4-080
D-P5DWL	BAP2-040	BAP2-040	BAP2-063	BAP2-080	BAP2-080

\* Mounting brackets are attached to models D-A3□C/A44C/G39C/K39C. When placing an order, indicate as described below, in accordance with the cylinder size.

(Example) ø40....D-A3□C-4

ø50....D-A3□C-5

ø63....D-A3□C-6

ø80....D-A3□C-8

ø100....D-A3□C-10

When other brackets are ordered separately, order by the above part numbers.

\*\* Stainless steel mounting screw kit

A set of stainless steel mounting screws (with set screws) described below is available and can be used as required by the operating environment. (The mounting bracket and band for auto switches must be ordered separately, as they are not included.)

BBA1: D-A5/A6/F5/J5

BBA3: D-B5/B6/G5/K5

When a switch model D-F5BAL or G5BAL is mounted on the cylinder at the time of shipment, the above stainless steel screws are used. When the switch is shipped alone, BBA1 or BBA3 is attached.

\*\*\* Series CDA2 models vary in the thickness of the cylinder tube wall. In cases where the band mount type is used as an applicable auto switch, select the part number of the new band referring to page 6-8-71 whenever the cylinder model is changed.