Air Cylinder

ø40, ø50, ø63, ø80, ø100

New

RoHS

Reduced weight by changing the shape of the rod cover and head cover.

Weight reduced by up to

15% lighter

(ø63-50 stroke)

1.31 kg
New CA2

(1.54 kg
Existing model)

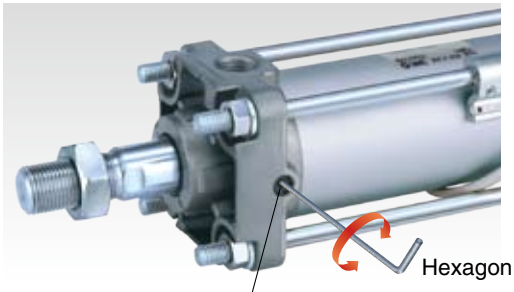
Easy air cushion control

Number of rotations of adjustable cushion valve increased to 3

Number of rotations increased

New **3 rotations.** Air cushion adjustment range increased thus fine adjustment is now possible.

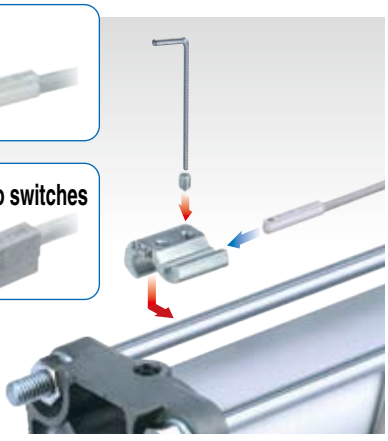
Smooth operation at the stroke end



Various switches such as compact auto switches and magnetic field resistant auto switches can be mounted.

Compact auto switches
- D-M9□
- D-A9□

Magnetic field resistant auto switches
- D-P3DW
- D-P4DW



Series CA2

SMC

CAT.ES20-222A

New Part numbers with rod end bracket and/or pivot bracket available

Not necessary to order a bracket for the applicable cylinder separately

Note) Mounting bracket is shipped together with the product, but not assembled.

Example) CDA2$^{D}_{T}$40-100Z-**N** **W** -M9BW

Pivot bracket	
Nil	None
N	Pivot bracket is shipped together with the product, but not assembled.

N: Kit of pivot bracket and double clevis

Kit of pivot bracket and trunnion

Rod end bracket	
Nil	None
V	Single knuckle joint
W	Double knuckle joint

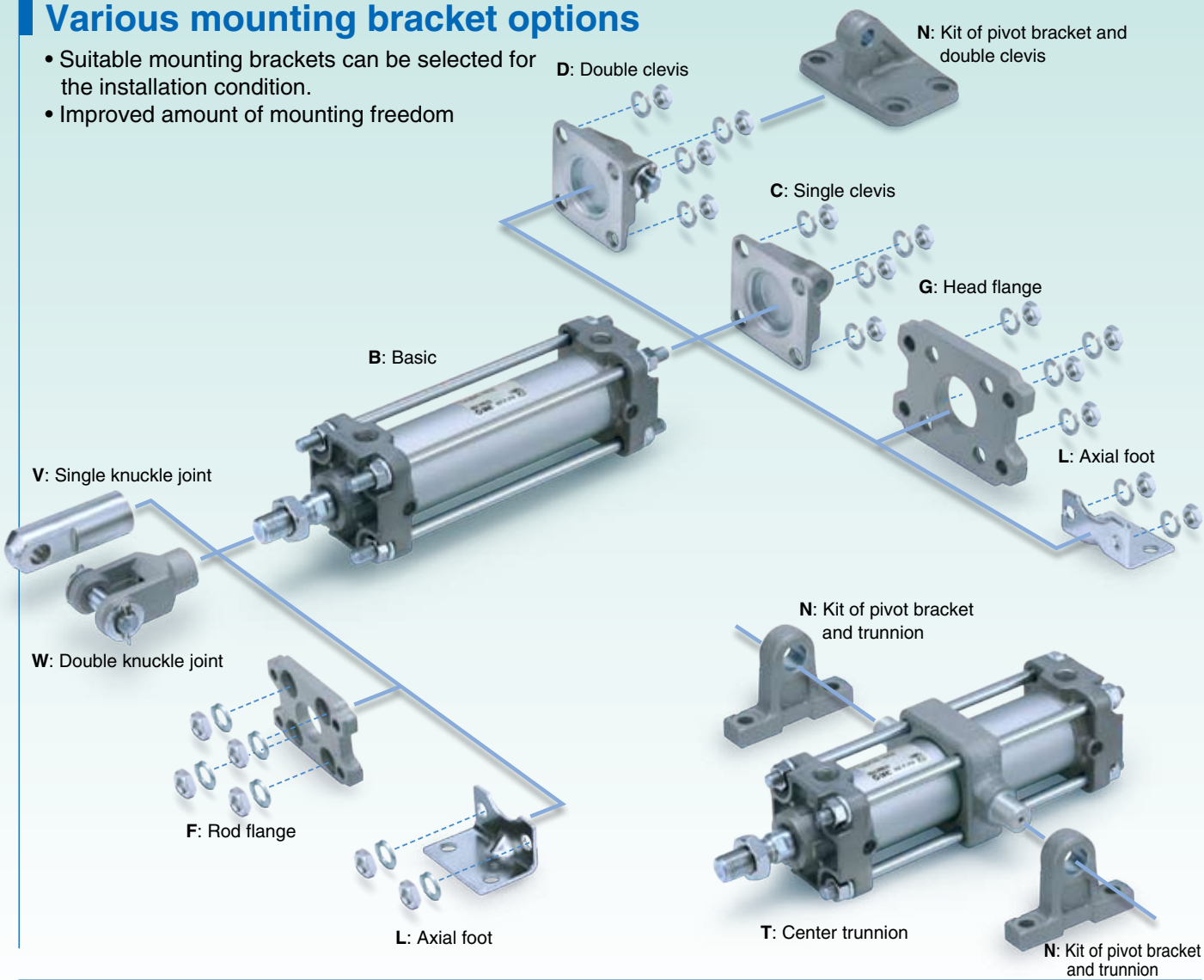
With rod end bracket

V: Single knuckle joint

W: Double knuckle joint

Various mounting bracket options

- Suitable mounting brackets can be selected for the installation condition.
- Improved amount of mounting freedom



Reduced weight by changing the shape of the rod cover and head cover.

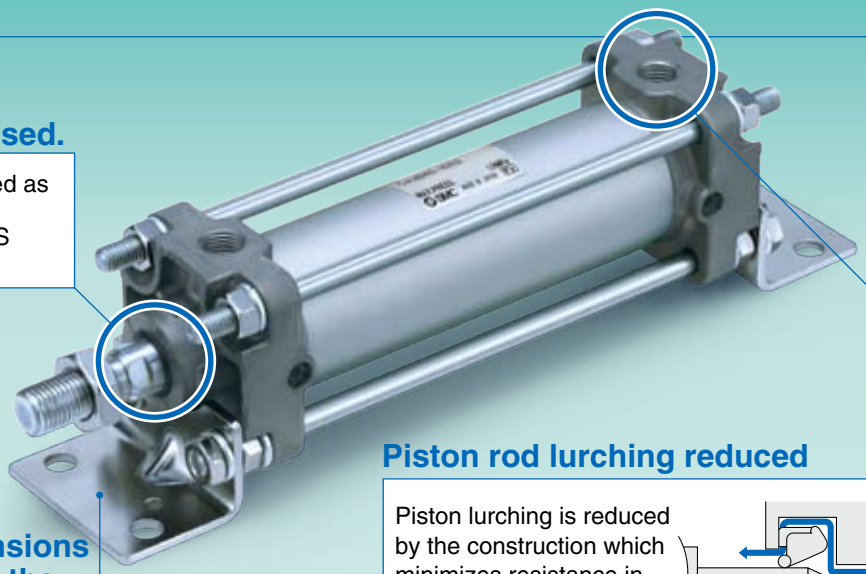
(kg)

Bore size (mm)	New CA2	Reduction rate	Existing model
40	0.93	12%	1.06
50	1.31	15%	1.54
63	1.84	14%	2.15
80	3.17	11%	3.56
100	4.29	10%	4.76

∗ Compared to 50 stroke for each size

No substances hazardous to the environment are used.

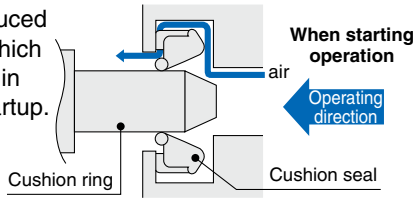
Lead free bushing is used as sliding material.
Compliant with EU RoHS directive.



Mounting dimensions are the same as the existing product.

Piston rod lurching reduced

Piston lurching is reduced by the construction which minimizes resistance in the air passage at startup.



Stroke Variations

Bore size (mm)	Standard stroke																Long stroke (L and F only)
	20	50	75	100	125	150	175	200	250	300	350	400	450	500	600	700	
40	●	●	●	●	●	●	●	●	●	●	●	●	●	●			800
50	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●		1200
63	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●		
80	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	1400
100	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	1500

Series Variations

Series	Type	Bore size (mm)	Variations: With rod boot	Variations: Clean series	Variations: Water resistant	Catalogs
CA2 Standard New	Single rod	40, 50, 63 80, 100	●			Page of this catalog Page 1
	Double rod		●			
CA2 Standard	Single rod	40, 50, 63 80, 100	●	●	●	Best Pneumatics Page 356
	Double rod		●			Best Pneumatics Page 368
CA2K Non-rotating rod	Single rod	40, 50, 63	●			Best Pneumatics Page 373
	Double rod		●			Best Pneumatics Page 377
CA2□Y Smooth Cylinder	Single rod	40, 50, 63 80, 100	●			Best Pneumatics Page 1094
CBA2 With end lock	Double rod		●			Best Pneumatics Page 382
CA2□H Air-hydro	Single rod		●			Best Pneumatics Page 388
	Double rod		●			Best Pneumatics Page 396

Combinations of Standard Products and Made to Order Specifications

Series CA2

●: Standard
◎: Made to Order
○: Special product (Contact SMC for details.)
—: Not available

Symbol	Specifications	Applicable bore size	CA2 (Standard) Double acting Single rod	CA2 (Standard) Double acting Double rod
Standard	**Standard**	ø40 to ø100	●	●
CDA2-□Z	**Built-in magnet**		●	●
Long st	**Long stroke**		●	●
CA2□-□JZ	**With rod boot (Nylon tarpaulin)**		●	●
CA2□-□KZ	**With rod boot (Heat resistant tarpaulin)**		●	●
25A-	**Copper (Cu) and Zinc (Zn) free** Note 1)		●	○
-XA□	**Change of rod end shape**	ø40 to ø100	◎	◎
-XC7	**Tie-rod, cushion valve, tie-rod nut, etc. made of stainless steel**		◎	◎
-XC8	**Adjustable stroke cylinder/Adjustable extension type**		◎	—
-XC14	**Change of trunnion bracket mounting position**		◎	◎
-XC15	**Change of tie-rod length**		◎	◎
-XC30	**Rod trunnion**		◎	○

Note 1) For details, refer to the SMC's website.

Air Cylinder
Standard: Double Acting, Single Rod
Series CA2
ø40, ø50, ø63, ø80, ø100

RoHS

How to Order

CA2 L 50 – 100 Z –

With auto switch CDA2 D 50 – 100 Z – N W – M9BW –

With auto switch (Built-in magnet)

Mounting

B	Basic
L	Axial foot
F	Rod flange
G	Head flange
C	Single clevis
D	Double clevis
T	Center trunnion

Bore size

40	40 mm
50	50 mm
63	63 mm
80	80 mm
100	100 mm

Bracket 1

Nil	Without bracket
N	Pivot bracket

Bracket 2

Nil	Without bracket
V	Single knuckle joint
W	Double knuckle joint

Cylinder suffix

Rod boot	Nil	Without
	J	Nylon tarpaulin
	K	Heat resistant tarpaulin

Cylinder stroke (mm)
For details, refer to the next page.

Built-in Magnet Cylinder Model
If a built-in magnet cylinder without an auto switch is required, there is no need to enter the symbol for the auto switch.
(Example) CDA2L40-100Z

Auto switch

Nil	Without auto switch

* For applicable auto switch model, refer to the table below.

Number of auto switches

Nil	2 pcs.
S	1 pc.
3	3 pcs.
n	"n" pcs.

Made to Order
For details, refer to the next page.

Applicable Auto Switches
/Refer to page 1263 to 1371 in Best Pneumatics No. 2 for further information on auto switches.

Type	Special function	Electrical entry	Indicator light	Wiring (Output)	Load voltage DC	Load voltage DC	Load voltage AC	Auto switch model: Tie-rod mounting	Auto switch model: Band mounting	Lead wire length (m): 0.5 (Nil)	1 (M)	3 (L)	5 (Z)	Pre-wired connector	Applicable load	
Solid state auto switch	——	Grommet	Yes	3-wire (NPN)	24 V	5 V, 12 V	—	M9N	—	●	●	●	○	○	IC circuit	Relay, PLC
								—	G59	●	—	●	○	○		
				3-wire (PNP)				M9P	—	●	●	●	○	○		
								—	G5P	●	—	●	○	○		
				2-wire		12 V		M9B	—	●	●	●	○	○	—	
								—	K59	●	—	●	○	○		
					—	—	100 V, 200 V	J51	—	●	—	●	○	—		
		Terminal conduit		3-wire (NPN)	24 V	12 V	—	G39C	G39	—	—	—	—	—		
				2-wire				K39C	K39	—	—	—	—	—	IC circuit	
	Diagnostic indication (2-color indication)	Grommet		3-wire (NPN)		5 V, 12 V		M9NW	—	●	●	●	○	○		
								—	G59W	●	—	●	○	○		
				3-wire (PNP)				M9PW	—	●	●	●	○	○		
								—	G5PW	●	—	●	○	○		
				2-wire		12 V		M9BW	—	●	●	●	○	○	—	
								—	K59W	●	—	●	○	○		
	Water resistant (2-color indication)			3-wire (NPN)		5 V, 12 V		M9NA**	—	○	○	●	○	○		
				3-wire (PNP)				M9PA**	—	○	○	●	○	○		
				2-wire		12 V		M9BA**	—	○	○	●	○	○		
								—	G5BA**	—	—	●	○	○		
	With diagnostic output (2-color indication)			4-wire (NPN)		5 V, 12 V		F59F	G59F	●	—	●	○	○	IC circuit	
	Magnetic field resistant (2-color indication)			2-wire (Non-polar)		—		P3DW	—	●	—	●	●	○	—	
								P4DW	—	—	—	●	●	○		
Reed auto switch	——	Grommet	Yes	3-wire (NPN equivalent)	—	5 V	—	A96	—	●	—	●	—	—	IC circuit	—
				2-wire	24 V	12 V	100 V	A93	—	●	—	●	●	—	—	Relay, PLC
			No				100 V or less	A90	—	●	—	●	—	—	IC circuit	
			Yes				100 V, 200 V	A54	B54	●	—	●	●	—	—	
			No				200 V or less	A64	B64	●	—	●	—	—		
		Terminal conduit	Yes				—	A33C	A33	—	—	—	—	—	—	
		DIN terminal					100 V, 200 V	A34C	A34	—	—	—	—	—		PLC
								A44C	A44	—	—	—	—	—		Relay, PLC
	Diagnostic indication (2-color indication)	Grommet				—	—	A59W	B59W	●	—	●	—	—		

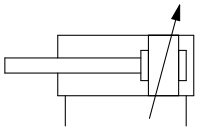
** Water resistant type auto switches can be mounted on the above models, but in such case SMC cannot guarantee water resistance. A water resistant type cylinder is recommended for use in an environment which requires water resistance.

* Lead wire length symbols: 0.5m····· Nil (Example) M9NW
1m····· M (Example) M9NWM
3m····· L (Example) M9NWL
5m····· Z (Example) M9NWZ

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

* Since there are other applicable auto switches then listed above, refer to page 23 for details.
* For details about auto switches with pre-wired connector, refer to pages 1328 and 1329 in Best Pneumatics No. 2. For the D-P3DW□, refer to the catalog CAT.ES20-201.
* The D-A9□/M9□□□/P3DW□ auto switches are shipped together, (but not assembled). (However, auto switch mounting brackets are assembled for the D-A9□/M9□□□ before shipment.)

JIS Symbol
Double acting



Air cushion

Made to Order

Made to Order
(For details, refer to pages 25 to 28.)

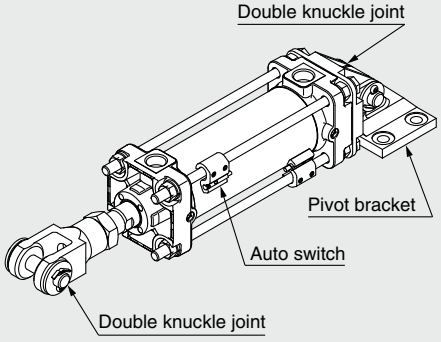
Symbol	Specifications
-XA□	Change of rod end shape
-XC7	Tie-rod, cushion valve, tie-rod nut, etc. made of stainless steel
-XC8	Adjustable stroke cylinder/Adjustable extension type
-XC14	Change of trunnion bracket mounting position
-XC15	Change of tie-rod length
-XC30	Rod trunnion

Refer to pages 19 to 23 for cylinders with auto switches.

- Auto switch proper mounting position (detection at stroke end) and its mounting height
- Minimum stroke for auto switch mounting
- Operating range
- Auto switch mounting brackets/Part no.

Ordering Example of Cylinder Assembly

Cylinder model:
CDA2D50-100Z-NW-M9BW



Mounting D: Double clevis
Pivot bracket N: Yes
Rod end bracket W: Double knuckle joint
Auto switch D-M9BW: 2 pcs.

∗ Pivot bracket, double knuckle joint and auto switch are shipped together with the product, but not assembled.

Specifications

Bore size (mm)		40	50	63	80	100
Fluid		Air				
Action		Double acting				
Proof pressure		1.5 MPa				
Maximum operating pressure		1.0 MPa				
Ambient and fluid temperature		Without auto switch: –10 to 70°C Note 1) With auto switch: –10 to 60°C Note 1)				
Minimum operating pressure		0.05 MPa				
Piston speed		50 to 500 mm/s				
Cushion		Air cushion				
Stroke length tolerance		Up to 250st.: $^{+1.0}_{0}$ 251 to 1000st.: $^{+1.4}_{0}$ 1001 to 1500st.: $^{+1.8}_{0}$				
Lubrication		Not required (Non-lube)				
Mounting		Basic, Foot, Rod flange, Head flange Single clevis, Double clevis, Center trunnion				
Allowable kinetic energy (J) Note 2)	When air cushion is activated	2.8	4.6	7.8	16	29
	When air cushion is not activated	0.33	0.56	0.91	1.50	2.68

Note 1) With no freezing
Note 2) Activate the air cushion when operating the cylinder. If this is not done, the piston rod assembly or the tie-rods will be damaged when the allowable kinetic energy exceeds the values shown in the table above.

Standard Strokes

For model with auto switch, also refer to Minimum Strokes for Auto Switch Mounting on pages 21 and 22.

(mm)

Bore size	Standard stroke∗	Long stroke (L and F only)
40	25, 50, 75, 100, 125, 150, 175, 200, 250, 300, 350, 400, 450, 500	800
50, 63	25, 50, 75, 100, 125, 150, 175, 200, 250, 300, 350, 400, 450, 500, 600	1200
80, 100	25, 50, 75, 100, 125, 150, 175, 200, 250, 300, 350, 400, 450, 500, 600, 700	ø80: 1400 ø100: 1500

∗ Intermediate strokes not listed above are produced upon receipt of order.

Rod Boot Material

Symbol	Rod boot material	Max. ambient temperature
J	Nylon tarpaulin	70°C
K	Heat resistant tarpaulin	110°C∗

∗ Maximum ambient temperature for the rod boot

Accessories

Mounting		Basic	Axial foot	Rod flange	Head flange	Single clevis	Double clevis	Center trunnion
Standard	Rod end nut	●	●	●	●	●	●	●
	Clevis pin	—	—	—	—	—	●	—
Option	Single knuckle joint	●	●	●	●	●	●	●
	Double knuckle joint (with pin)	●	●	●	●	●	●	●
	With rod boot	●	●	●	●	●	●	●

Minimum Stroke for Auto Switch Mounting

⚠Caution

1. The minimum stroke for mounting varies with the auto switch type and cylinder mounting type. In particular, the center trunnion type needs careful attention. (For details, refer to pages 21 and 22.)

Weights/Aluminum Tube

(kg)

Bore size (mm)		40	50	63	80	100
Basic weight	Basic	0.73	1.06	1.53	2.73	3.71
	Axial foot	0.91	1.25	1.83	3.40	4.64
	Flange	1.09	1.48	2.28	4.18	5.57
	Single clevis	0.95	1.37	2.12	3.84	5.43
	Double clevis	0.99	1.46	2.28	4.13	5.95
	Trunnion	1.08	1.51	2.29	4.28	5.93
Additional weight per 50 mm of stroke	All mounting brackets	0.20	0.25	0.31	0.46	0.58
Accessories	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) **CA2L40-100Z** (Axial foot type, ø40, 100 stroke)

- Basic weight ····· 0.91 kg
- Additional weight ····· 0.20/50 stroke
- Cylinder stroke ····· 100 stroke

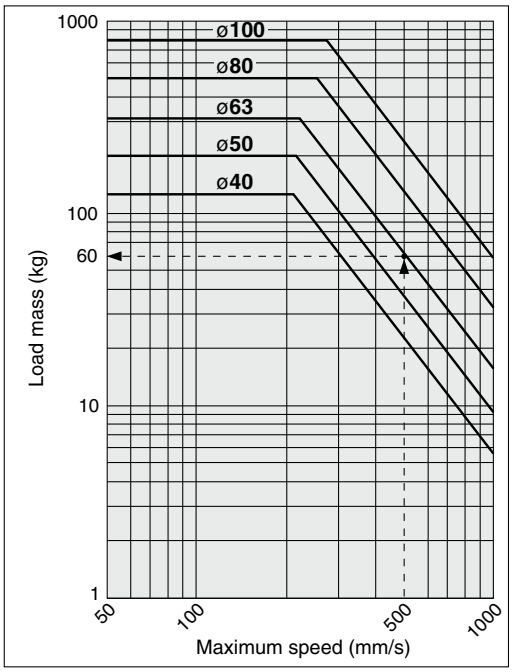
0.91 + 0.20 x 100/50 = 1.31 kg

Mounting Brackets/Part No.

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

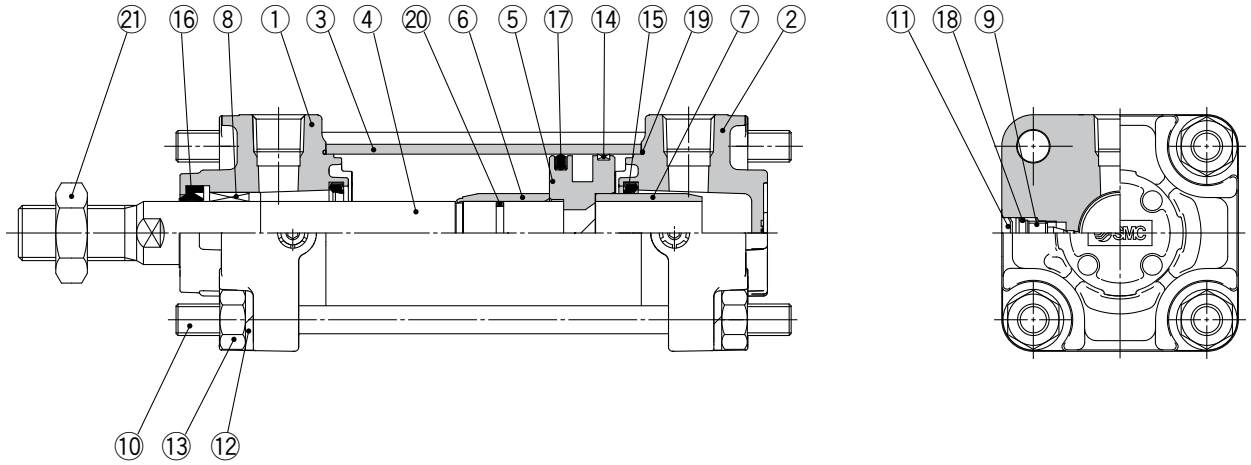
* When axial foot brackets are used, order two pieces per cylinder.
** A clevis pin, flat washers and split pins are shipped together with double clevis.

Allowable Kinetic Energy



(Example) Find the upper limit of rod end load when an air cylinder of ø63 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 mass 60 kg.

Construction



Component Parts

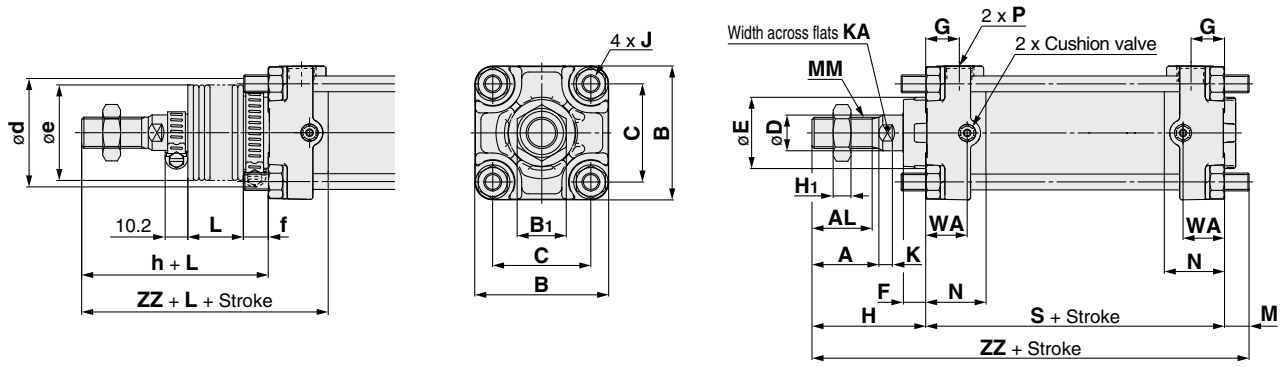
No.	Description	Material	Note
1	**Rod cover**	Aluminum die-casted	Trivalent chromate
2	**Head cover**	Aluminum die-casted	Trivalent chromate
3	**Cylinder tube**	Aluminum alloy	Hard anodized
4	**Piston rod**	Carbon steel	Hard chrome plating
5	**Piston**	Aluminum alloy	
6	**Cushion ring**	Aluminum alloy	Anodized
7	**Cushion ring B**	Aluminum alloy	Anodized
8	**Bushing**	Bearing alloy	
9	**Cushion valve**	Steel wire	Plating
10	**Tie-rod**	Carbon steel	Trivalent zinc chromate
11	**Retaining ring**	Spring steel	Phosphate coating
12	**Spring washer**	Steel wire	Plating
13	**Tie-rod nut**	Rolled steel	Plating
14	**Wear ring**	Resin	
15	**Cushion seal**	Urethane	
16	**Rod seal**	NBR	
17	**Piston seal**	NBR	
18	**Cushion valve seal**	NBR	
19	**Cylinder tube gasket**	NBR	
20	**Piston gasket**	NBR	O-ring
21	**Rod end nut**	Rolled steel	Plating

Replacement Parts/Seal Kit

Bore size (mm)	Kit no.	Contents
40	CA2-40Z-PS	Set of nos. above ⑮, ⑯, ⑰, ⑲
50	CA2-50Z-PS	
63	CA2-63Z-PS	
80	CA2-80Z-PS	
100	CA2-100Z-PS	

∗ Seal kit includes ⑮, ⑯, ⑰, ⑲. Order the seal kit based on each bore size.
∗ Do not disassemble the trunnion type. Refer to page 29.
∗ Seal kit includes a grease pack (ø40, 50: 10 g, ø63, 80: 20 g, ø100: 30 g). Order with the following part number when only the grease pack is needed.
Grease pack part number: GR-S-010 (10 g)**, GR-S-020** (20 g)

Basic: CA2B

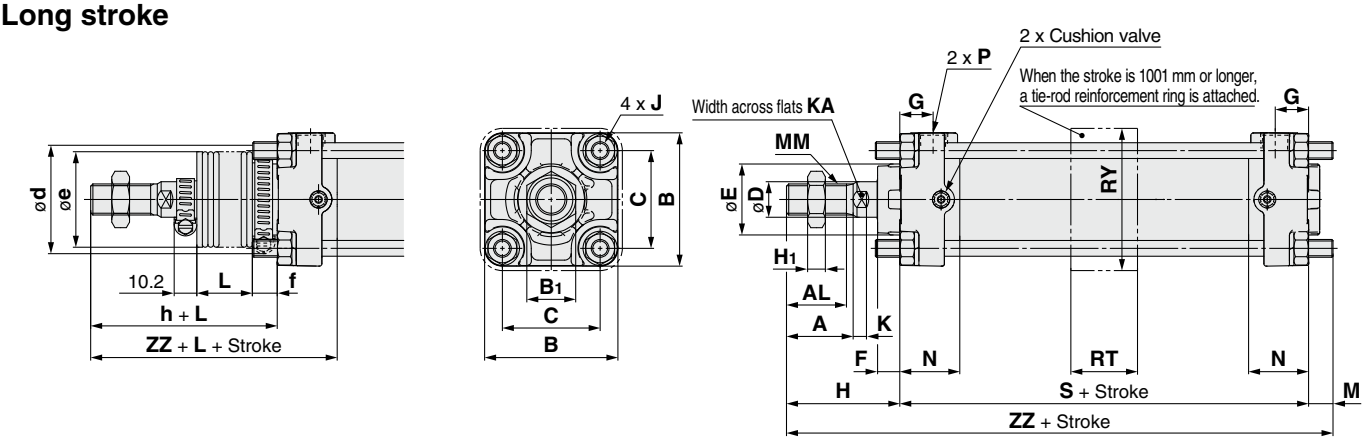


(mm)

Bore size (mm)	Stroke range (mm)	A	AL	B	B_1	C	D	E	F	G	H_1	J	K	KA	M
40	Up to 500	30	27	60	22	44	16	32	10	15	8	M8 x 1.25	6	14	11
50	Up to 600	35	32	70	27	52	20	40	10	17	11	M8 x 1.25	7	18	11
63	Up to 600	35	32	85	27	64	20	40	10	17	11	M10 x 1.25	7	18	14
80	Up to 700	40	37	102	32	78	25	52	14	21	13	M12 x 1.75	10	22	17
100	Up to 700	40	37	116	41	92	30	52	14	21	16	M12 x 1.75	10	26	17

Bore size (mm)	Stroke range (mm)	MM	N	P	S	WA	Without rod boot		With rod boot					
							H	ZZ	d	e	f	h	L	ZZ
40	Up to 500	M14 x 1.5	27	1/4	84	18.5	51	146	56	43	11.2	59	1/4 Stroke	154
50	Up to 600	M18 x 1.5	30	3/8	90	18.5	58	159	64	52	11.2	66	1/4 Stroke	167
63	Up to 600	M18 x 1.5	31	3/8	98	23	58	170	64	52	11.2	66	1/4 Stroke	178
80	Up to 700	M22 x 1.5	37	1/2	116	28.5	71	204	76	65	12.5	80	1/4 Stroke	213
100	Up to 700	M26 x 1.5	40	1/2	126	28.5	72	215	76	65	14	81	1/4 Stroke	224

Long stroke



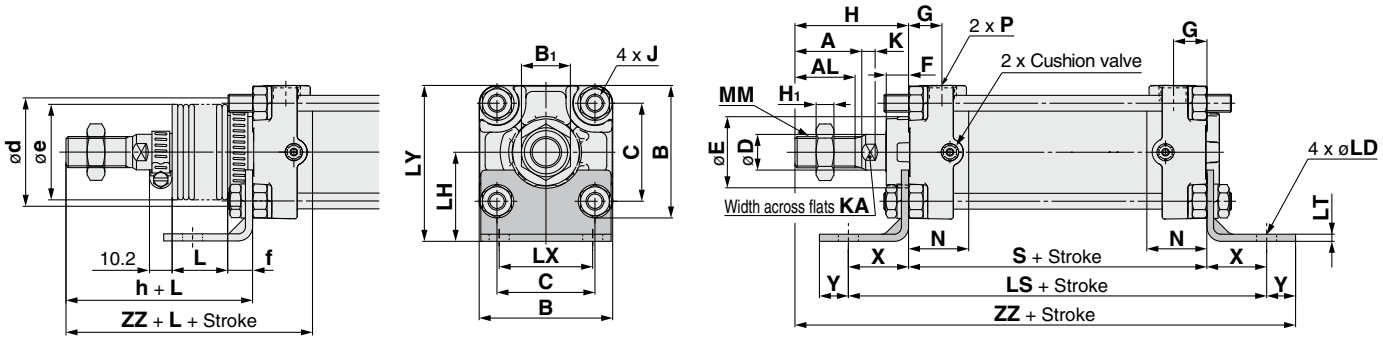
(mm)

Bore size (mm)	Stroke range (mm)	A	AL	B	B_1	C	D	E	F	G	H_1	J	K	KA	M	
															Without reinforcement ring	With reinforcement ring
40	501 to 800	30	27	60	22	44	16	32	10	15	8	M8 x 1.25	6	14	11	11
50	601 to 1200	35	32	70	27	52	20	40	10	17	11	M8 x 1.25	7	18	11	12
63	601 to 1200	35	32	85	27	64	20	40	10	17	11	M10 x 1.25	7	18	14	15
80	751 to 1400	40	37	102	32	78	25	52	14	21	13	M12 x 1.75	10	22	17	19
100	751 to 1500	40	37	116	41	92	30	52	14	21	16	M12 x 1.75	10	26	17	19

Bore size (mm)	Stroke range (mm)	MM	N	P	RT	RY	S	Without rod boot		With rod boot					
								H	ZZ	d	e	f	h	L	ZZ
40	501 to 800	M14 x 1.5	27	1/4	30	64	84	51	146	56	43	11.2	59	1/4 Stroke	154
50	601 to 1200	M18 x 1.5	30	3/8	30	76	90	58	159	64	52	11.2	66	1/4 Stroke	167
63	601 to 1200	M18 x 1.5	31	3/8	40	92	98	58	170	64	52	11.2	66	1/4 Stroke	178
80	751 to 1400	M22 x 1.5	37	1/2	45	112	116	71	204	76	65	12.5	80	1/4 Stroke	213
100	751 to 1500	M26 x 1.5	40	1/2	50	136	126	72	215	76	65	14	81	1/4 Stroke	224

Note 1) Operating temperature range of model with built-in magnet: –10 °C to 60 °C
Note 2) For model with built-in magnet, consider the minimum stroke suitable to install the auto switches.
Note 3) If the stroke of this cylinder exceeds the standard limit, buckling of the piston rod must be considered (e.g. use an external guide).

Axial Foot: CA2L

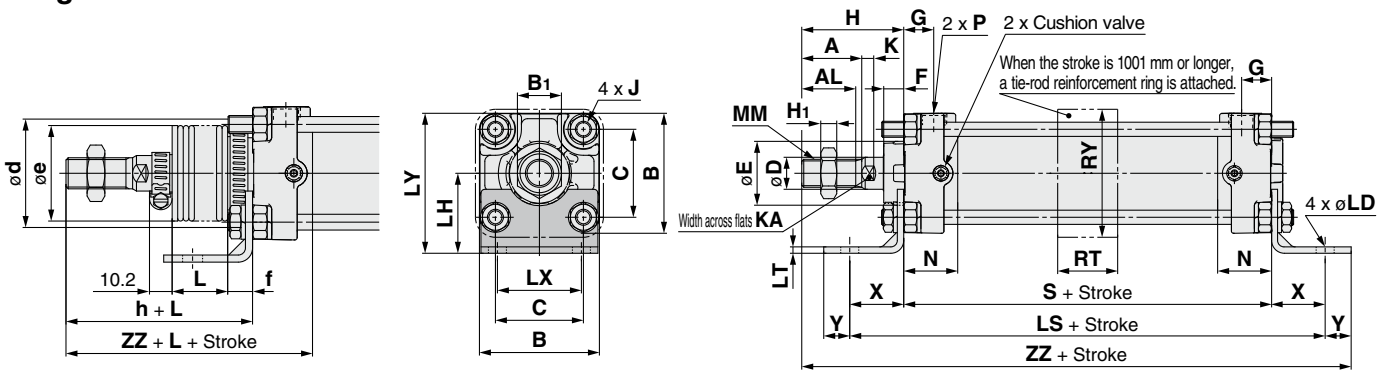


(mm)

Bore size (mm)	Stroke range (mm)	A	AL	B	B_1	C	D	E	F	G	H_1	J	K	KA	LD	LH	LS	LT	LX
40	Up to 500	30	27	60	22	44	16	32	10	15	8	M8 x 1.25	6	14	9	40	138	3.2	42
50	Up to 600	35	32	70	27	52	20	40	10	17	11	M8 x 1.25	7	18	9	45	144	3.2	50
63	Up to 600	35	32	85	27	64	20	40	10	17	11	M10 x 1.25	7	18	11.5	50	166	3.2	59
80	Up to 700	40	37	102	32	78	25	52	14	21	13	M12 x 1.75	10	22	13.5	65	204	4.5	76
100	Up to 700	40	37	116	41	92	30	52	14	21	16	M12 x 1.75	10	26	13.5	75	212	6	92

Bore size (mm)	Stroke range (mm)	LY	MM	N	P	S	X	Y	Without rod boot		With rod boot					
									H	ZZ	d	e	f	h	L	ZZ
40	Up to 500	70	M14 x 1.5	27	1/4	84	27	13	51	175	56	43	11.2	59	1/4 Stroke	183
50	Up to 600	80	M18 x 1.5	30	3/8	90	27	13	58	188	64	52	11.2	66	1/4 Stroke	196
63	Up to 600	93	M18 x 1.5	31	3/8	98	34	16	58	206	64	52	11.2	66	1/4 Stroke	214
80	Up to 700	116	M22 x 1.5	37	1/2	116	44	16	71	247	76	65	12.5	80	1/4 Stroke	256
100	Up to 700	133	M26 x 1.5	40	1/2	126	43	17	72	258	76	65	14.0	81	1/4 Stroke	267

Long stroke



(mm)

Bore size (mm)	Stroke range (mm)	A	AL	B	B_1	C	D	E	F	G	H_1	J	K	KA	LD	LH	LS	LT	LX	LY
40	501 to 800	30	27	60	22	44	16	32	10	15	8	M8 × 1.25	6	14	9	40	138	3.2	42	70
50	601 to 1200	35	32	70	27	52	20	40	10	17	11	M8 × 1.25	7	18	9	45	144	3.2	50	80
63	601 to 1200	35	32	85	27	64	20	40	10	17	11	M10 × 1.25	7	18	11.5	50	166	3.2	59	93
80	751 to 1400	40	37	102	32	78	25	52	14	21	13	M12 × 1.75	10	22	13.5	65	204	4.5	76	116
100	751 to 1500	40	37	116	41	92	30	52	14	21	16	M12 × 1.75	10	26	13.5	75	212	6	92	133

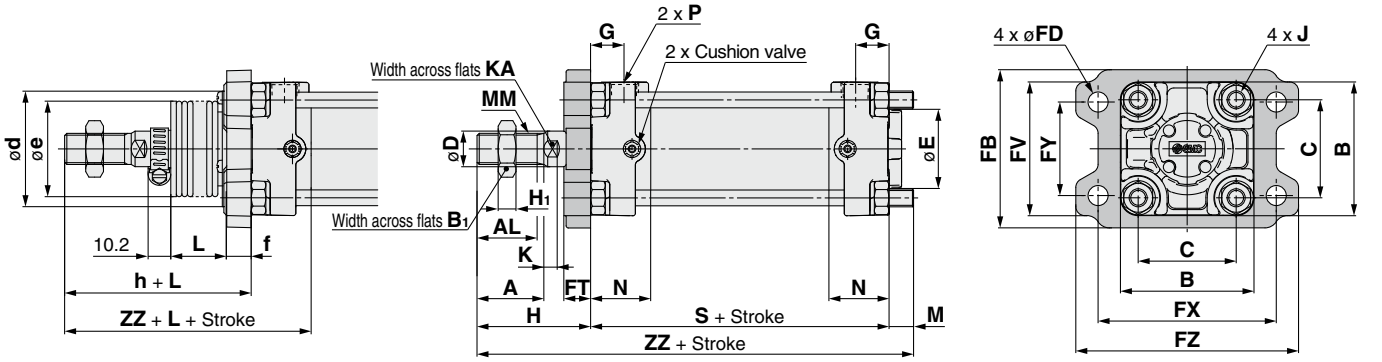
Bore size (mm)	Stroke range (mm)	MM	N	P	S	X	Y	RT	RY	Without rod boot		With rod boot					
										H	ZZ	d	e	f	h	L	ZZ
40	501 to 800	M14 x 1.15	27	1/4	84	27	13	30	64	51	175	56	43	11.2	59	1/4 Stroke	183
50	601 to 1200	M18 x 1.15	30	3/8	90	27	13	30	76	58	188	64	52	11.2	66	1/4 Stroke	196
63	601 to 1200	M18 x 1.15	31	3/8	98	34	16	40	92	58	206	64	52	11.2	66	1/4 Stroke	214
80	751 to 1400	M22 x 1.15	37	1/2	116	44	16	45	112	71	247	76	65	12.5	80	1/4 Stroke	256
100	751 to 1500	M26 x 1.15	40	1/2	126	43	17	50	136	72	258	76	65	14.0	81	1/4 Stroke	267

Note 1) Operating temperature range of model with built-in magnet: –10 °C to 60 °C

Note 2) For model with built-in magnet consider the minimum stroke suitable to install the auto switches.

Note 3) If the stroke of this cylinder exceeds the standard limit, buckling of the piston rod must be considered (e.g. use an external guide).

Rod Flange: CA2F



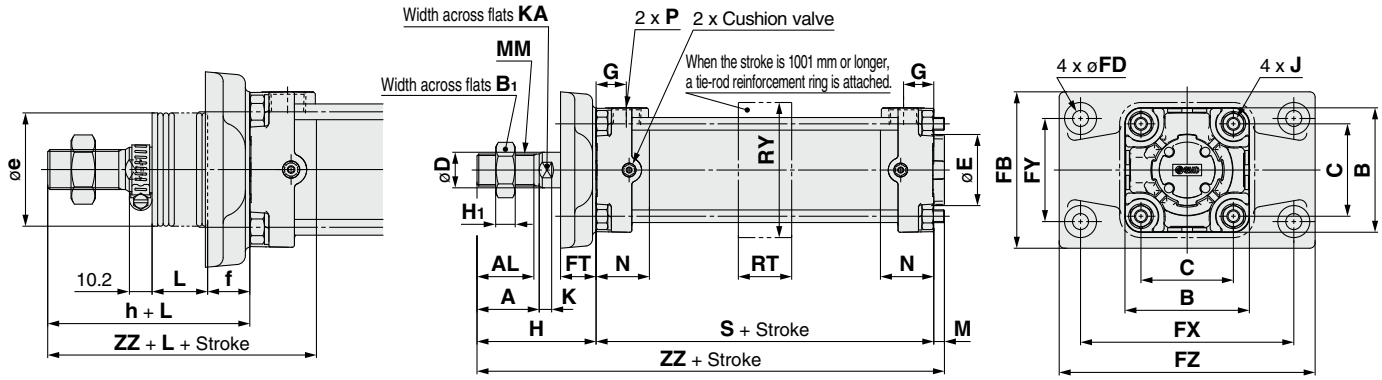
(mm)

Bore size (mm)	Stroke range (mm)	A	AL	B	B_1	C	D	E	FB	FD	FT	FV	FX	FY	FZ	G	H_1	J	K	KA
40	Up to 500	30	27	60	22	44	16	32	71	9	12	60	80	42	100	15	8	M8 x 1.25	6	14
50	Up to 600	35	32	70	27	52	20	40	81	9	12	70	90	50	110	17	11	M8 x 1.25	7	18
63	Up to 600	35	32	85	27	64	20	40	101	11.5	15	86	105	59	130	17	11	M10 x 1.25	7	18
80	Up to 700	40	37	102	32	78	25	52	119	13.5	18	102	130	76	160	21	13	M12 x 1.75	10	22
100	Up to 700	40	37	116	41	92	30	52	133	13.5	18	116	150	92	180	21	16	M12 x 1.75	10	26

Bore size (mm)	Stroke range (mm)	M	MM	N	P	S	Without rod boot		With rod boot					
							H	ZZ	d*	e	f	h	L	ZZ
40	Up to 500	11	M14 x 1.5	27	1/4	84	51	146	52	43	15	59	1/4 Stroke	154
50	Up to 600	11	M18 x 1.5	30	3/8	90	58	159	58	52	15	66	1/4 Stroke	167
63	Up to 600	14	M18 x 1.5	31	3/8	98	58	170	58	52	17.5	66	1/4 Stroke	178
80	Up to 700	17	M22 x 1.5	37	1/2	116	71	204	80	65	21.5	80	1/4 Stroke	213
100	Up to 700	17	M26 x 1.5	40	1/2	126	72	215	80	65	21.5	81	1/4 Stroke	224

★ For installing an air cylinder, when a hole must be made to accommodate the rod portion, make sure to machine a hole that is larger than the outside diameter of the boot mounting bracket ød.

Long stroke



(mm)

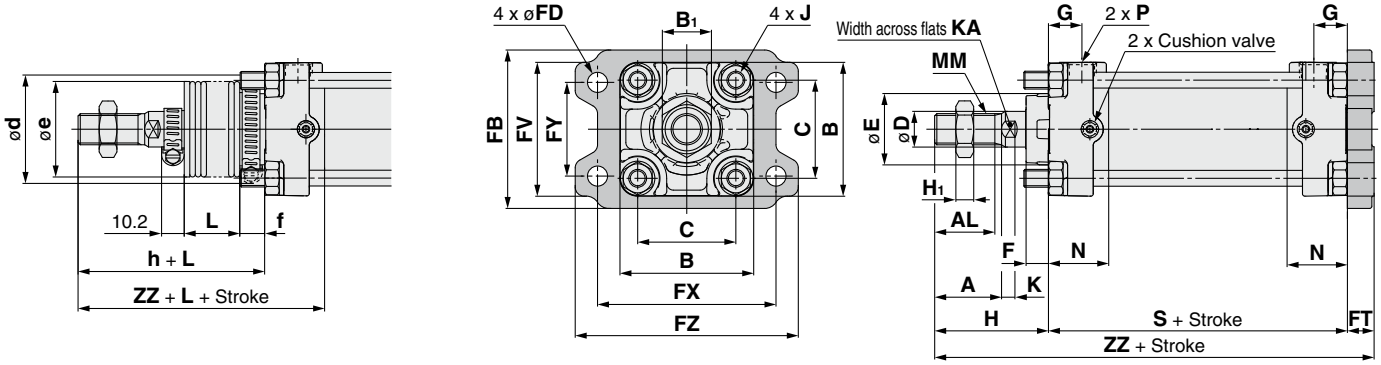
Bore size (mm)	Stroke range (mm)	A	AL	B	B_1	C	D	E	FB	FD	FT	FX	FY	FZ	G	H_1	J	K	KA	M
40	501 to 800	30	27	60	22	44	16	32	71	9	12	80	42	100	15	8	M8 x 1.25	6	14	11
50	601 to 1200	35	32	70	27	52	20	40	88	9	20	120	58	144	17	11	M8 x 1.25	7	18	6
63	601 to 1200	35	32	85	27	64	20	40	105	11.5	23	140	64	170	17	11	M10 x 1.25	7	18	10
80	751 to 1400	40	37	102	32	78	25	52	124	13.5	28	164	84	198	21	13	M12 x 1.75	10	22	12
100	751 to 1500	40	37	116	41	92	30	52	140	13.5	29	180	100	220	21	16	M12 x 1.75	10	26	12

Bore size (mm)	Stroke range (mm)	MM	N	P	RT	RY	S	Without rod boot		With rod boot				
								H	ZZ	e*	f	h	L	ZZ
40	501 to 800	M14 x 1.5	27	1/4	30	64	84	51	146	52	19	66	1/4 Stroke	162
50	601 to 1200	M18 x 1.5	30	3/8	30	76	90	67	163	52	19	66	1/4 Stroke	162
63	601 to 1200	M18 x 1.5	31	3/8	40	92	98	71	179	52	19	66	1/4 Stroke	174
80	751 to 1400	M22 x 1.5	37	1/2	45	112	116	87	215	65	21	80	1/4 Stroke	208
100	751 to 1500	M26 x 1.5	40	1/2	50	136	126	89	227	65	21	81	1/4 Stroke	219

★ For installing an air cylinder, when a hole must be made to accommodate the rod portion, make sure to machine a hole that is larger than the outer diameter of the boot øe.

Note 1) Operating temperature range of model with built-in magnet: –10 °C to 60 °C
Note 2) For model with built-in magnet consider, the minimum stroke suitable to install the auto switches.
Note 3) If the stroke of this cylinder exceeds the standard limit, buckling of the piston rod must be considered (e.g. use an external guide).

Head Flange: CA2G

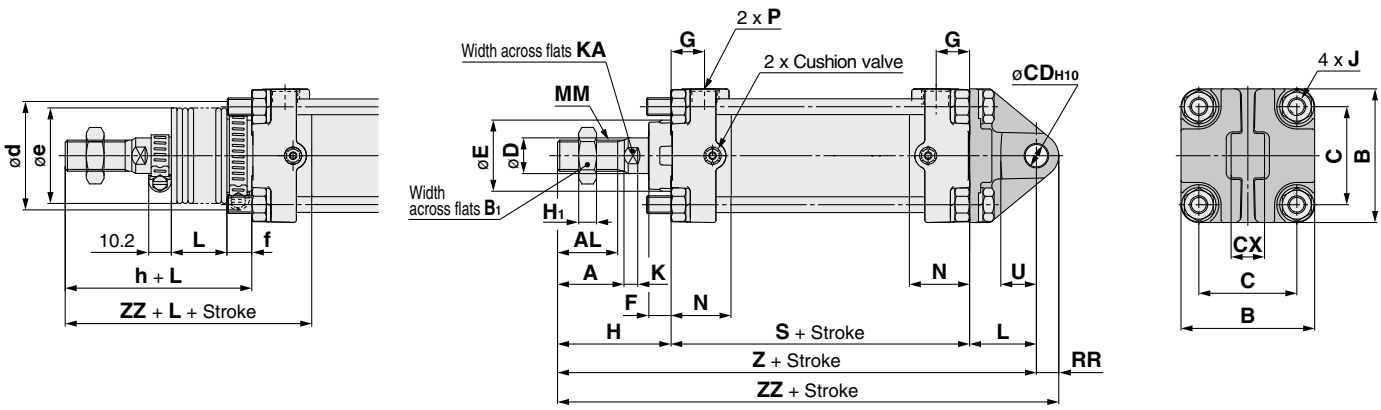


(mm)

Bore size (mm)	Stroke range (mm)	A	AL	B	B_1	C	D	E	F	FB	FD	FT	FV	FX	FY	FZ	G	H_1	J
40	Up to 500	30	27	60	22	44	16	32	10	71	9	12	60	80	42	100	15	8	M8 x 1.25
50	Up to 600	35	32	70	27	52	20	40	10	81	9	12	70	90	50	110	17	11	M8 x 1.25
63	Up to 600	35	32	85	27	64	20	40	10	101	11.5	15	86	105	59	130	17	11	M10 x 1.25
80	Up to 700	40	37	102	32	78	25	52	14	119	13.5	18	102	130	76	160	21	13	M12 x 1.75
100	Up to 700	40	37	116	41	92	30	52	14	133	13.5	18	116	150	92	180	21	16	M12 x 1.75

Bore size (mm)	Stroke range (mm)	K	KA	MM	N	P	S	Without rod boot		With rod boot					
								H	ZZ	d	e	f	h	L	ZZ
40	Up to 500	6	14	M14 x 1.5	27	1/4	84	51	147	56	43	11.2	59	1/4 Stroke	155
50	Up to 600	7	18	M18 x 1.5	30	3/8	90	58	160	64	52	11.2	66	1/4 Stroke	168
63	Up to 600	7	18	M18 x 1.5	31	3/8	98	58	171	64	52	11.2	66	1/4 Stroke	179
80	Up to 700	10	22	M22 x 1.5	37	1/2	116	71	205	76	65	12.5	80	1/4 Stroke	214
100	Up to 700	10	26	M26 x 1.5	40	1/2	126	72	216	76	65	14.0	81	1/4 Stroke	225

Single Clevis: CA2C

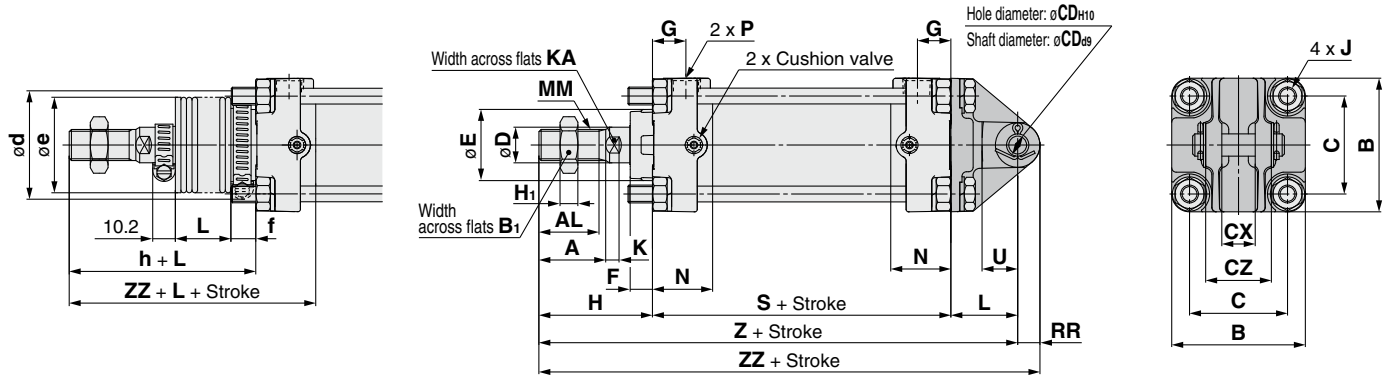


(mm)

Bore size (mm)	Stroke range (mm)	A	AL	B	B_1	C	CD_{H10}	CX	D	E	F	G	H_1	J	K	KA	L
40	Up to 500	30	27	60	22	44	$10^{+0.058}_{0}$	$15^{-0.1}_{-0.3}$	16	32	10	15	8	M8 x 1.25	6	14	30
50	Up to 600	35	32	70	27	52	$12^{+0.070}_{0}$	$18^{-0.1}_{-0.3}$	20	40	10	17	11	M8 x 1.25	7	18	35
63	Up to 600	35	32	85	27	64	$16^{+0.070}_{0}$	$25^{-0.1}_{-0.3}$	20	40	10	17	11	M10 x 1.25	7	18	40
80	Up to 700	40	37	102	32	78	$20^{+0.084}_{0}$	$31.5^{-0.1}_{-0.3}$	25	52	14	21	13	M12 x 1.75	10	22	48
100	Up to 700	40	37	116	41	92	$25^{+0.084}_{0}$	$35.5^{-0.1}_{-0.3}$	30	52	14	21	16	M12 x 1.75	10	26	58

Bore size (mm)	Stroke range (mm)	MM	N	P	RR	S	U	Without rod boot			With rod boot						
								H	Z	ZZ	d	e	f	h	L	Z	ZZ
40	Up to 500	M14 x 1.5	27	1/4	10	84	16	51	165	175	56	43	11.2	59	1/4 Stroke	173	183
50	Up to 600	M18 x 1.5	30	3/8	12	90	19	58	183	195	64	52	11.2	66	1/4 Stroke	191	203
63	Up to 600	M18 x 1.5	31	3/8	16	98	23	58	196	212	64	52	11.2	66	1/4 Stroke	204	220
80	Up to 700	M22 x 1.5	37	1/2	20	116	28	71	235	255	76	65	12.5	80	1/4 Stroke	244	264
100	Up to 700	M26 x 1.5	40	1/2	25	126	36	72	256	281	76	65	14.0	81	1/4 Stroke	265	290

Double Clevis: CA2D



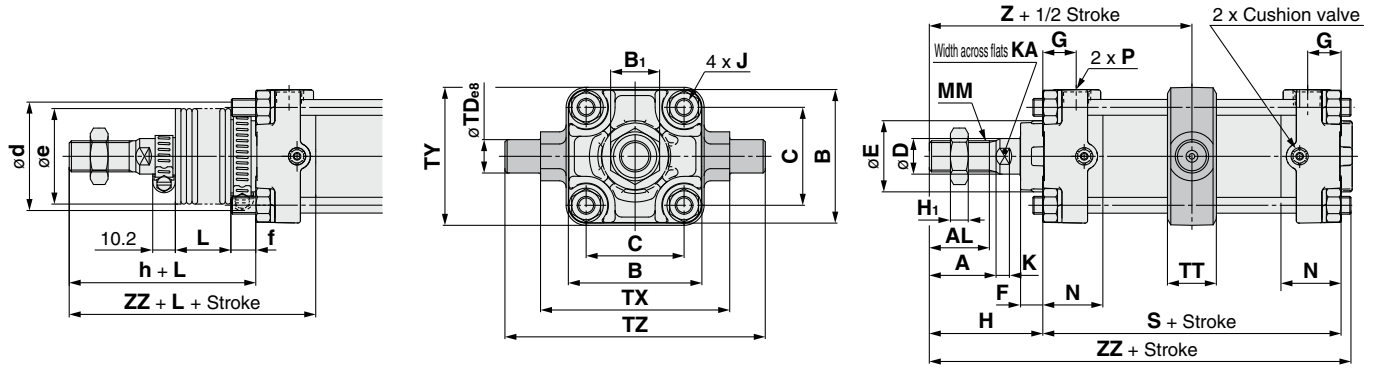
∗ A pin and retaining rings are shipped together with double clevis and/or double knuckle joint. (mm)

Bore size (mm)	Stroke range (mm)	A	AL	B	B_1	C	CD_{H10}	CX	CZ	D	E	F	G	H_1	J	K	KA	L
40	Up to 500	30	27	60	22	44	$10^{+0.058}_{0}$	$15^{+0.3}_{+0.1}$	29.5	16	32	10	15	8	M8 x 1.25	6	14	30
50	Up to 600	35	32	70	27	52	$12^{+0.070}_{0}$	$18^{+0.3}_{+0.1}$	38	20	40	10	17	11	M8 x 1.25	7	18	35
63	Up to 600	35	32	85	27	64	$16^{+0.070}_{0}$	$25^{+0.3}_{+0.1}$	49	20	40	10	17	11	M10 x 1.25	7	18	40
80	Up to 700	40	37	102	32	78	$20^{+0.084}_{0}$	$31.5^{+0.3}_{+0.1}$	61	25	52	14	21	13	M12 x 1.75	10	22	48
100	Up to 700	40	37	116	41	92	$25^{+0.084}_{0}$	$35.5^{+0.3}_{+0.1}$	64	30	52	14	21	16	M12 x 1.75	10	26	58

Bore size (mm)	Stroke range (mm)	MM	N	P	RR	S	U	Without rod boot			With rod boot						
								H	Z	ZZ	d	e	f	h	L	Z	ZZ
40	Up to 500	M14 x 1.5	27	1/4	10	84	16	51	165	175	56	43	11.2	59	1/4 Stroke	173	183
50	Up to 600	M18 x 1.5	30	3/8	12	90	19	58	183	195	64	52	11.2	66	1/4 Stroke	191	203
63	Up to 600	M18 x 1.5	31	3/8	16	98	23	58	196	212	64	52	11.2	66	1/4 Stroke	204	220
80	Up to 700	M22 x 1.5	37	1/2	20	116	28	71	235	255	76	65	12.5	80	1/4 Stroke	244	264
100	Up to 700	M26 x 1.5	40	1/2	25	126	36	72	256	281	76	65	14.0	81	1/4 Stroke	265	290

∗ A clevis pin, flat washers and split pins are included.

Center Trunnion: CA2T



(mm)

Bore size (mm)	Stroke range (mm)	A	AL	B	B_1	C	D	E	F	G	H_1	J	K	KA	MM	N	P	S
40	Up to 500	30	27	60	22	44	16	32	10	15	8	M8 x 1.25	6	14	M14 x 1.5	27	1/4	84
50	Up to 600	35	32	70	27	52	20	40	10	17	11	M8 x 1.25	7	18	M18 x 1.5	30	3/8	90
63	Up to 600	35	32	85	27	64	20	40	10	17	11	M10 x 1.25	7	18	M18 x 1.5	31	3/8	98
80	Up to 700	40	37	102	32	78	25	52	14	21	13	M12 x 1.75	10	22	M22 x 1.5	37	1/2	116
100	Up to 700	40	37	116	41	92	30	52	14	21	16	M12 x 1.75	10	26	M26 x 1.5	40	1/2	126

Bore size (mm)	Stroke range (mm)	TD_{e8}	TT	TX	TY	TZ	Without rod boot			With rod boot						
							H	Z	ZZ	d	e	f	h	L	Z	ZZ
40	Up to 500	$15^{-0.032}_{-0.059}$	22	85	62	117	51	93	140	56	43	11.2	59	1/4 Stroke	101	148
50	Up to 600	$15^{-0.032}_{-0.059}$	22	95	74	127	58	103	154	64	52	11.2	66	1/4 Stroke	111	162
63	Up to 600	$18^{-0.032}_{-0.059}$	28	110	90	148	58	107	162	64	52	11.2	66	1/4 Stroke	115	170
80	Up to 700	$25^{-0.040}_{-0.073}$	34	140	110	192	71	129	194	76	65	12.5	80	1/4 Stroke	138	203
100	Up to 700	$25^{-0.040}_{-0.073}$	40	162	130	214	72	135	206	76	65	14.0	81	1/4 Stroke	144	215

∗ Do not disassemble the trunnion type. Refer to page 29.

Trunnion and Double Clevis Pivot Bracket

• Strength is the same as cylinder brackets.

Applicable Series

Bracket type	Applicable series
Trunnion pivot bracket	CA2
Double clevis pivot bracket	CA2

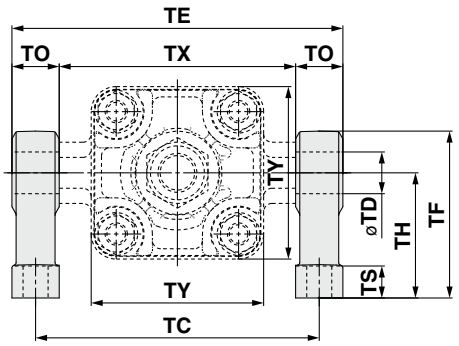
∗ Please confirm SMC at the time of mounting.

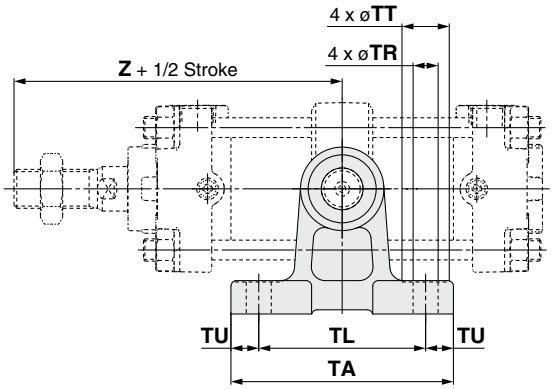
Description \ Bore size	CA2□40	CA2□50	CA2□63	CA2□80	CA2□100
Trunnion pivot bracket	CA2-S04		CA2-S06	MB-S10	
Double clevis pivot bracket	CA2-B04	CA2-B05	CA2-B06	CA2-B08	CA2-B10

∗ Order 2 trunnion pivot brackets per cylinder.

Trunnion pivot bracket

Material: Cast iron



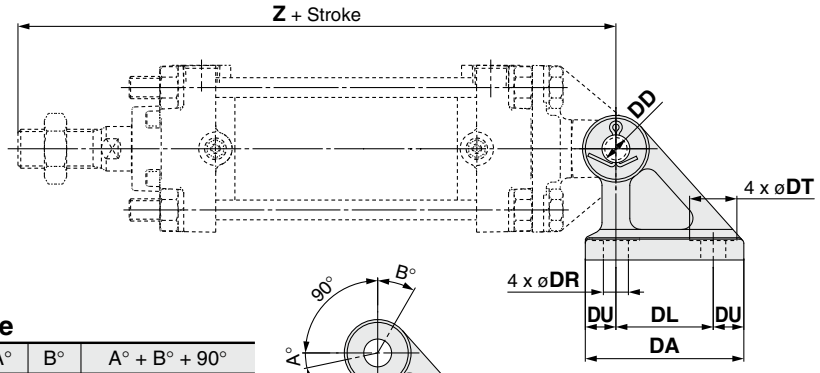


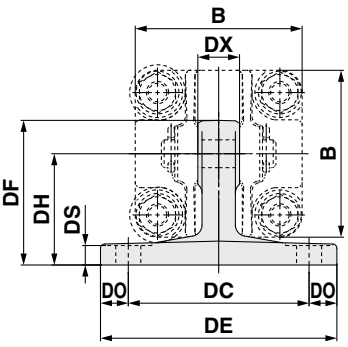
(mm)

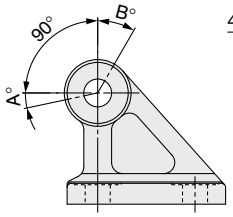
Part no.	Bore size (mm)	TA	TL	TU	TC	TX	TE	TO	TR	TT	TS	TH	TF	TY	Z	TD-H10 (Hole)
CA2-S04	40	80	60	10	102	85	119	17	9	17	12	45	60	62	93	$15^{+0.070}_{0}$
	50	80	60	10	112	95	129	17	9	17	12	45	60	74	103	$15^{+0.070}_{0}$
CA2-S06	63	100	70	15	130	110	150	20	11	22	14	55	73	90	107	$18^{+0.070}_{0}$
MB-S10	80	120	90	15	166	140	192	26	13.5	24	17	75	100	110	129	$25^{+0.084}_{0}$
	100	120	90	15	188	162	214	26	13.5	24	17	75	100	130	135	$25^{+0.084}_{0}$

Double clevis pivot bracket

Material: Cast iron







Rotating Angle

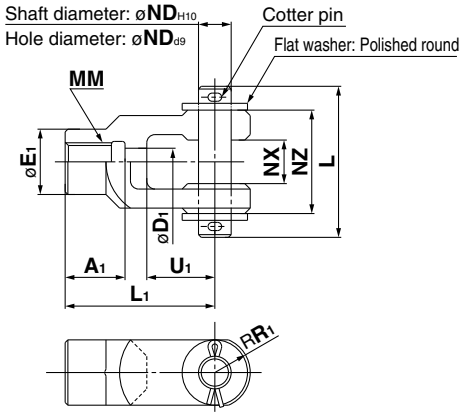
Bore size (mm)	A°	B°	A° + B° + 90°
40 to 100	12°	60°	162°

(mm)

Part no.	Bore size (mm)	DA	DL	DU	DC	DX	DE	DO	DR	DT	DS	DH	DF	B	Z	DDH10 (Hole)
CA2-B04	40	57	35	11	65	15	85	10	9	17	8	40	52	60	165	$10^{+0.058}_{0}$
CA2-B05	50	57	35	11	65	18	85	10	9	17	8	40	52	70	183	$12^{+0.070}_{0}$
CA2-B06	63	67	40	13.5	80	25	105	12.5	11	22	10	50	66	85	196	$16^{+0.070}_{0}$
CA2-B08	80	93	60	16.5	100	31.5	130	15	13.5	24	12	65	90	102	235	$20^{+0.084}_{0}$
CA2-B10	100	93	60	16.5	100	35.5	130	15	13.5	24	12	65	90	116	256	$25^{+0.084}_{0}$

Dimensions of Accessories

Y Type Double Knuckle Joint

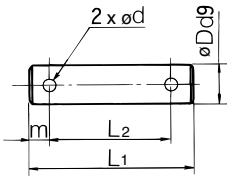


Material: Cast iron (mm)

Part no.	Applicable bore size	A$_1$	E$_1$	D$_1$	L$_1$	MM	R$_1$	U$_1$	ND	NX	NZ	L	Split pin size	Flat washer size
Y-04D	**40**	22	24	10	55	M14 x 1.5	13	25	12	$16^{+0.3}_{+0.1}$	38	55.5	ø3 x 18L	Polished round 12
Y-05D	**50, 63**	27	28	14	60	M18 x 1.5	15	27	12	$16^{+0.3}_{+0.1}$	38	55.5	ø3 x 18L	Polished round 12
Y-08D	**80**	37	36	18	71	M22 x 1.5	19	28	18	$28^{+0.3}_{+0.1}$	55	76.5	ø4 x 25L	Polished round 18
Y-10D	**100**	37	40	21	83	M26 x 1.5	21	38	20	$30^{+0.3}_{+0.1}$	61	83	ø4 x 30L	Polished round 20

∗ A knuckle pin, split pins and flat washers are included.

Clevis Pin/Knuckle Pin

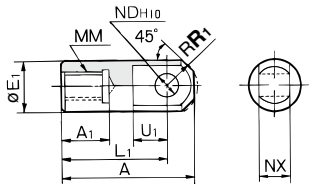


Material: Carbon steel (mm)

Part no.	Applicable bore size		Dd9	L$_1$	L$_2$	m	d Drill through	Included split pin	Included flat washer
	Clevis	Knuckle							
CDP-2A	**40**	—	$10^{-0.040}_{-0.076}$	46	38	4	3	ø3 x 18L	Polished round 10
CDP-3A	**50**	**40, 50, 63**	$12^{-0.050}_{-0.093}$	55.5	47.5	4	3	ø3 x 18L	Polished round 12
CDP-4A	**63**	—	$16^{-0.050}_{-0.093}$	71	61	5	4	ø4 x 25L	Polished round 16
CDP-5A	—	**80**	$18^{-0.050}_{-0.093}$	76.5	66.5	5	4	ø4 x 25L	Polished round 18
CDP-6A	**80**	**100**	$20^{-0.065}_{-0.117}$	83	73	5	4	ø4 x 30L	Polished round 20
CDP-7A	**100**	—	$25^{-0.065}_{-0.117}$	88	78	5	4	ø4 x 36L	Polished round 24

∗ Split pins and flat washers are included.

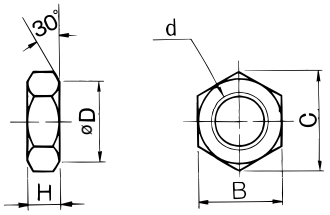
I Type Single Knuckle Joint



Material: Free cutting sulfur steel (mm)

Part no.	Applicable bore size	A	A$_1$	E$_1$	L$_1$	MM	R$_1$	U$_1$	ND$_{H10}$	NX
I-04A	**40**	69	22	24	55	M14 x 1.5	15.5	20	$12^{+0.070}_{0}$	$16^{-0.1}_{-0.3}$
I-05A	**50, 63**	74	27	28	60	M18 x 1.5	15.5	20	$12^{+0.070}_{0}$	$16^{-0.1}_{-0.3}$
I-08A	**80**	91	37	36	71	M22 x 1.5	22.5	26	$18^{+0.070}_{0}$	$28^{-0.1}_{-0.3}$
I-10A	**100**	105	37	40	83	M26 x 1.5	24.5	28	$20^{+0.084}_{0}$	$30^{-0.1}_{-0.3}$

Rod End Nut (Standard)



Material: Rolled steel (mm)

Part no.	Applicable bore size	d	H	B	C	D
NT-04	**40**	M14 x 1.5	8	22	25.4	21
NT-05	**50, 63**	M18 x 1.5	11	27	31.2	26
NT-08	**80**	M22 x 1.5	13	32	37.0	31
NT-10	**100**	M26 x 1.5	16	41	47.3	39

Air Cylinder
Standard: Double Acting, Double Rod
Series CA2W
ø40, ø50, ø63, ø80, ø100

RoHS

How to Order

	CA2W	L	50	–	100		Z	–				
With auto switch	CDA2W	L	50	–	100		Z	–	M9BW		–	

With auto switch (Built-in magnet)

Double rod

Mounting

B	Basic
L	Axial foot
F	Rod flange
T	Center trunnion

Bore size

40	40 mm
50	50 mm
63	63 mm
80	80 mm
100	100 mm

Cylinder stroke (mm) For details, refer to the next page.

Auto switch

Nil	Without auto switch

∗ For applicable auto switch model, refer to the table below.

Cylinder suffix

One end rod boot	Nil	Without rod boot
	J	Nylon tarpaulin
	K	Heat resistant tarpaulin
Both ends rod boot	Nil	Without rod boot
	JJ	Nylon tarpaulin
	KK	Heat resistant tarpaulin

∗ When more than one symbol is to be specified, indicate them in alphabetical order.

Number of auto switches

Nil	2 pcs.
S	1 pc.
3	3 pcs.
n	"n" pcs.

Made to Order For details, refer to the next page.

Built-in Magnet Cylinder Model

If a built-in magnet cylinder without an auto switch is required, there is no need to enter the symbol for the auto switch.
(Example) CDA2WL40-100Z

Applicable Auto Switches/Refer to page 1263 to 1371 in Best Pneumatics No. 2 for further information on auto switches.

Type	Special function	Electrical entry	Indicator light	Wiring (Output)	Load voltage DC	Load voltage DC	Load voltage AC	Auto switch model: Tie-rod mounting	Auto switch model: Band mounting	Lead wire length (m): 0.5 (Nil)	1 (M)	3 (L)	5 (Z)	Pre-wired connector	Applicable load	
Solid state auto switch	——	Grommet	Yes	3-wire (NPN)	24 V	5 V,12 V	—	M9N	—	●	●	●	○	○	IC circuit	Relay, PLC
								—	G59	●	—	●	○	○		
				3-wire (PNP)				M9P	—	●	●	●	○	○		
								—	G5P	●	—	●	○	○		
				2-wire		12 V		M9B	—	●	●	●	○	○	—	
								—	K59	●	—	●	○	○		
					—	—	100 V, 200 V	J51	—	●	—	●	○	—		
		Terminal conduit		3-wire (NPN)	24 V	12 V	—	G39C	G39	—	—	—	—	—		
				2-wire				K39C	K39	—	—	—	—	—		
	Diagnostic indication (2-color indication)	Grommet		3-wire (NPN)		5 V,12 V		M9NW	—	●	●	●	○	○	IC circuit	
								—	G59W	●	—	●	○	○		
				3-wire(PNP)				M9PW	—	●	●	●	○	○		
								—	G5PW	●	—	●	○	○		
				2-wire		12 V		M9BW	—	●	●	●	○	○	—	
								—	K59W	●	—	●	○	○		
	Water resistant (2-color indication)			3-wire (NPN)		5 V,12 V		M9NA**	—	○	○	●	○	○		
				3-wire (PNP)				M9PA**	—	○	○	●	○	○		
				2-wire		12 V		M9BA**	—	○	○	●	○	○		
								—	G5BA**	—	—	●	○	○		
	With diagnostic output (2-color indication)			4-wire (NPN)		5 V,12 V		F59F	G59F	●	—	●	○	○	IC circuit	
	Magnetic field resistant (2-color indication)			2-wire (Non-polar)		—		P3DW	—	●	—	●	●	○	—	
								P4DW	—	—	—	●	●	○		
Reed auto switch	——	Grommet	Yes	3-wire (NPN equiv.)	—	5 V	—	A96	—	●	—	●	—	—	IC circuit	—
			Yes	2-wire	24 V	12 V	100 V	A93	—	●	—	●	●	—	—	Relay, PLC
			No				100 V or less	A90	—	●	—	●	—	—	IC circuit	
			Yes				100 V, 200 V	A54	B54	●	—	●	●	—	—	
			No				200 V or less	A64	B64	●	—	●	—	—		
		Terminal conduit	Yes				—	A33C	A33	—	—	—	—	—	—	
							100 V, 200 V	A34C	A34	—	—	—	—	—		PLC
		DIN terminal						A44C	A44	—	—	—	—	—		Relay, PLC
	Diagnostic indication (2-color indication)	Grommet				—	—	A59W	B59W	●	—	●	—	—		

** Water resistant type auto switches can be mounted on the above models, but in such case SMC cannot guarantee water resistance. A water-resistant type cylinder is recommended for use in an environment which requires water resistance.

∗ Lead wire length symbols: 0.5 m·····Nil (Example) M9NW
1 m····· M (Example) M9NWM
3 m····· L (Example) M9NWL
5 m····· Z (Example) M9NWZ

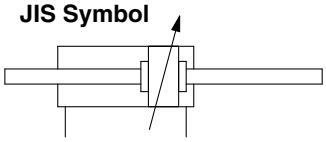
∗ Solid state auto switches marked with "○" are produced upon receipt of order.

∗ Since there are other applicable auto switches then listed above, refer to page 23 for details.

∗ For details about auto switches with pre-wired connector, refer to pages 1328 and 1329 in Best Pneumatics No. 2. For the D-P3DW□, refer to the catalog CAT.ES20-201.

∗ The D-A9□/M9□□□/P3DW□ auto switches are shipped together, (but not assembled). (However, auto switch mounting brackets are assembled for the D-A9□/M9□□□ before shipment.)

JIS Symbol



Air cushion

Made to Order

Made to Order
(For details, refer to pages 25 to 27.)

Symbol	Specifications
-XA□	Change of rod end shape
-XC7	Tie-rod, cushion valve, tie-rod nut, etc. made of stainless steel
-XC14	Change of trunnion bracket mounting position
-XC15	Change of tie-rod length

Minimum Stroke for Auto Switch Mounting

⚠Caution

1. The minimum stroke for mounting varies with the auto switch type and cylinder mounting type. In particular, the center trunnion type needs careful attention.
(For details, refer to pages 21 and 22.)

Refer to pages 19 to 23 for cylinders with auto switches.

- Minimum stroke for auto switch mounting
- Auto switch proper mounting position (detection at stroke end) and its mounting height
- Operating range
- Auto switch mounting brackets/Part no.

Specifications

Bore size (mm)	40	50	63	80	100
Fluid	Air				
Action	Double acting				
Proof pressure	1.5 MPa				
Maximum operating pressure	1.0 MPa				
Minimum operating pressure	0.08 MPa				
Piston speed	50 to 500 mm/s				
Ambient and fluid temperature	Without auto switch: –10 to 70°C* With auto switch: –10 to 60°C*				
Cushion	Air cushion				
Stroke length tolerance	Up to 250st.: $^{+1.0}_{0}$ 251 to 750st.: $^{+1.4}_{0}$				
Lubrication	Not required (Non-lube)				
Mounting	Basic, Axial foot, Rod flange, Center trunnion				

* With no freezing

Standard Strokes

For model with auto switch, also refer to Minimum Strokes for Auto Switch Mounting on pages 21 and 22.

(mm)

Bore size	Standard stroke
40	25, 50, 75, 100, 125, 150, 175, 200, 250, 300, 350, 400, 450, 500
50, 63	25, 50, 75, 100, 125, 150, 175, 200, 250, 300, 350, 400, 450, 500, 600
80, 100	25, 50, 75, 100, 125, 150, 175, 200, 250, 300, 350, 400, 450, 500, 600, 700

* Intermediate strokes not listed above are produced upon receipt of order.

Rod Boot Material

Symbol	Rod boot material	Max. ambient temperature
J	Nylon tarpaulin	70°C
K	Heat resistant tarpaulin	110°C*

* Maximum ambient temperature for the rod boot

Accessories

Mounting		Basic	Foot	Flange	Center trunnion
Standard	Rod end nut	●	●	●	●
Option	Single knuckle joint	●	●	●	●
	Double knuckle joint (with pin)	●	●	●	●
	With rod boot	●	●	●	●

* The above brackets have the same dimensions as those for the standard double acting single rod CA2 series. Refer to page 11.

Weights/Aluminum Tube (Steel Tube)

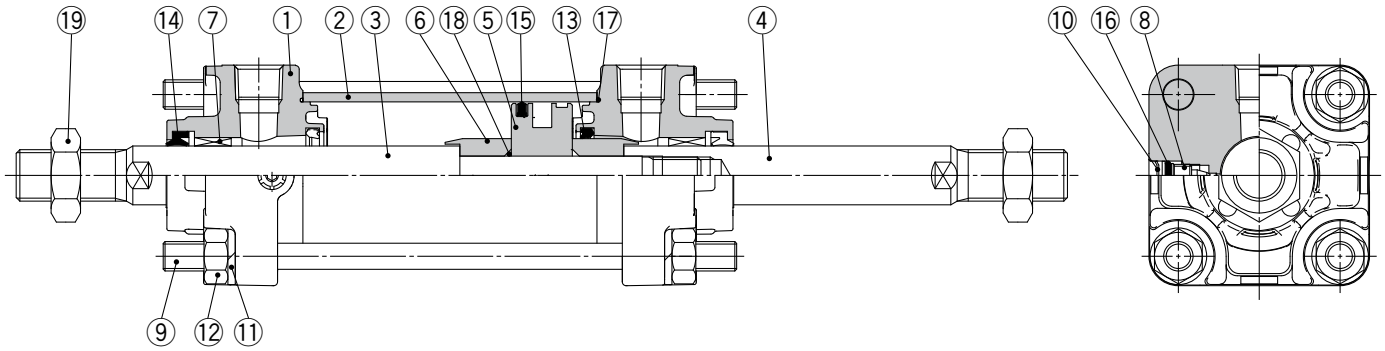
(kg)

Bore size (mm)			40	50	63	80	100
Basic weight	Basic	Aluminum tube	0.92	1.38	1.86	3.32	4.55
	Axial foot	Aluminum tube	1.11	1.6	2.19	3.99	5.54
	Flange	Aluminum tube	1.29	1.83	2.65	4.77	6.47
	Trunnion	Aluminum tube	1.28	1.86	2.66	4.87	6.83
Additional weight per 50 mm of stroke	All mounting brackets	Aluminum tube	0.28	0.37	0.44	0.66	0.86
Accessories	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) **CA2WL40-100Z** (Axial foot type, ø40, 100 stroke)
- Basic weight ·····1.18 (Axial foot type, ø40)
- Additional weight ·····0.28/50 stroke
- Cylinder stroke ·····100 stroke

1.18 + 0.28 x 100/50 = 1.74 kg

Construction



Component Parts

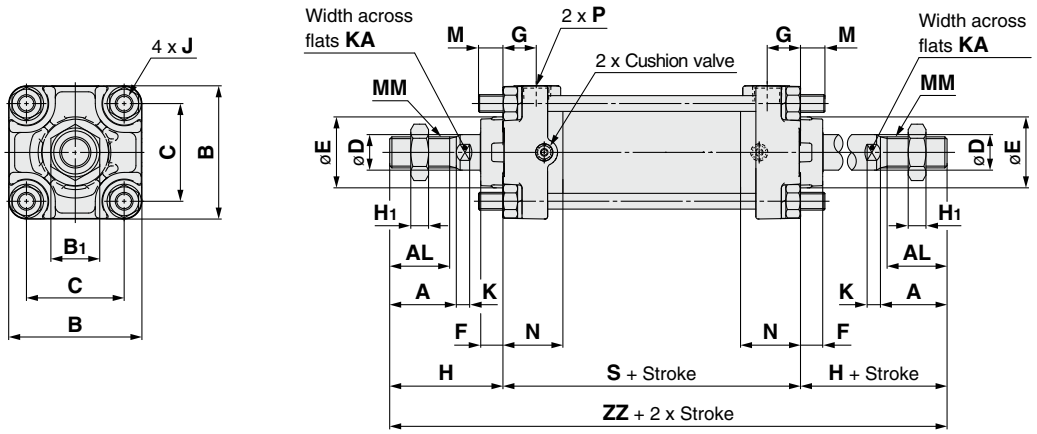
No.	Description	Material	Qty.	Note
1	**Rod cover**	Aluminum die-casted	2	Trivalent chromate
2	**Cylinder tube**	Aluminum alloy	1	Hard anodized
3	**Piston rod A**	Carbon steel	1	Hard chrome plating
4	**Piston rod B**	Carbon steel	1	Hard chrome plating
5	**Piston**	Aluminum alloy	1	
6	**Cushion ring**	Aluminum alloy	2	Anodized
7	**Bushing**	Bearing alloy	2	
8	**Cushion valve**	Steel wire	2	Plating
9	**Tie-rod**	Carbon steel	4	Trivalent zinc chromate
10	**Retaining ring**	Spring steel	2	Phosphate coating
11	**Spring washer**	Steel wire	8	Plating
12	**Tie-rod nut**	Rolled steel	8	Plating
13	**Cushion seal**	Urethane	2	
14	**Rod seal**	NBR	2	
15	**Piston seal**	NBR	1	
16	**Cushion valve seal**	NBR	2	
17	**Cylinder tube gasket**	NBR	2	
18	**Piston gasket**	NBR	1	O-ring
19	**Rod end nut**	Rolled steel	2	Plating

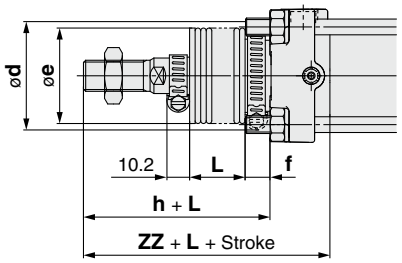
Replacement Parts/Seal Kit

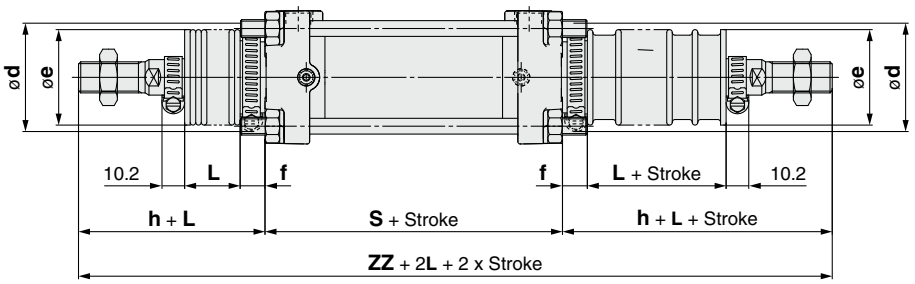
Bore size (mm)	Kit no.	Contents
	Air cylinder	
40	CA2W40Z-PS	Set of nos. above ⑬, ⑭, ⑮, ⑰
50	CA2W50Z-PS	
63	CA2W63Z-PS	
80	CA2W80Z-PS	
100	CA2W100Z-PS	

∗ Do not disassemble the trunnion type. Refer to page 29.
∗ Seal kit includes ⑬, ⑭, ⑮, ⑰. Order the seal kit based on each bore size.
∗ Seal kit includes a grease pack (ø40, 50: 10 g, ø63, 80: 20 g, ø100: 30 g). Order with the following part number when only the grease pack is needed.
Grease pack part number: GR-S-010 (10 g)**, GR-S-020** (20 g)

Basic: CA2WB







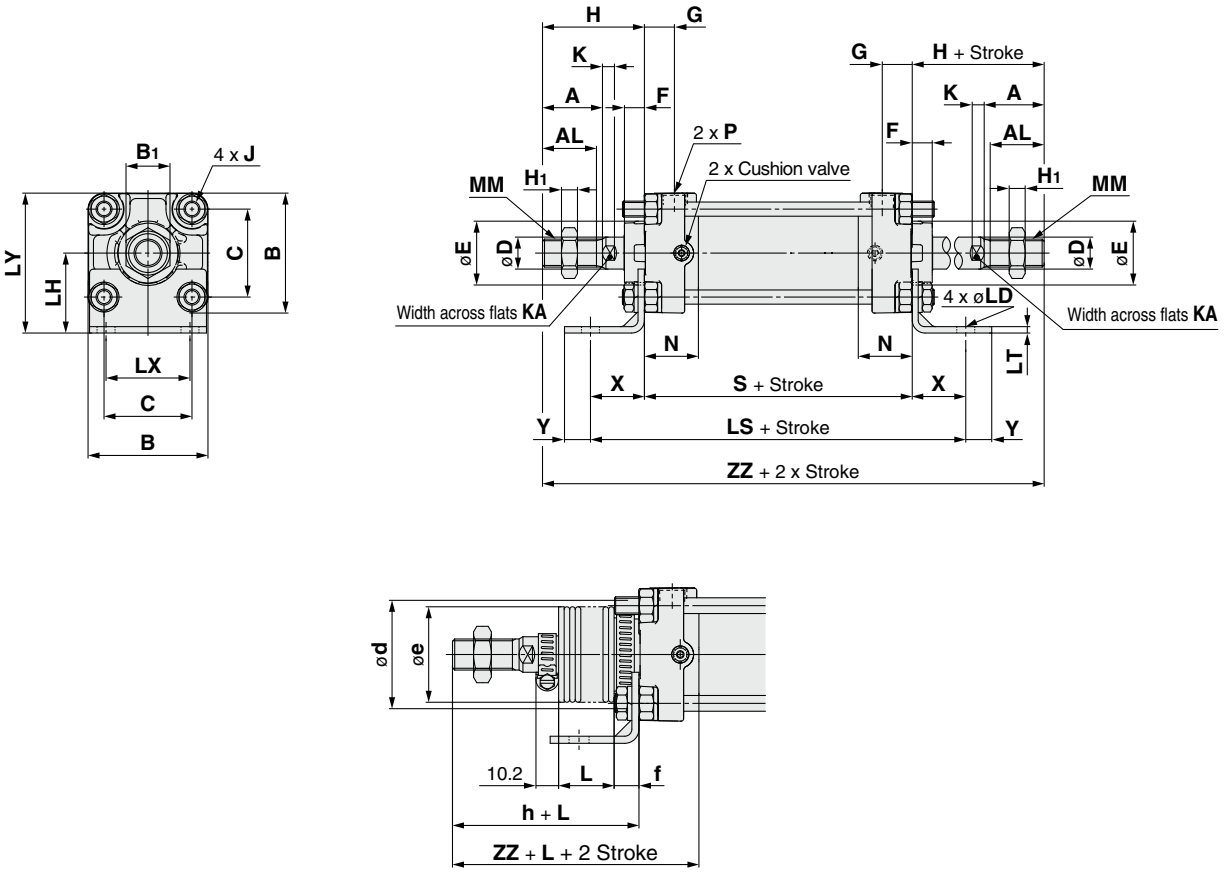
(mm)

Bore size (mm)	Stroke range (mm)	A	AL	B	B_1	C	D	E	F	G	H_1	J	K	KA	M	MM
40	Up to 500	30	27	60	22	44	16	32	10	15	8	M8 x 1.25	6	14	11	M14 x 1.5
50	Up to 600	35	32	70	27	52	20	40	10	17	11	M8 x 1.25	7	18	11	M18 x 1.5
63	Up to 600	35	32	85	27	64	20	40	10	17	11	M10 x 1.25	7	18	14	M18 x 1.5
80	Up to 750	40	37	102	32	78	25	52	14	21	13	M12 x 1.75	10	22	17	M22 x 1.5
100	Up to 750	40	37	116	41	92	30	52	14	21	16	M12 x 1.75	10	26	17	M26 x 1.5

Bore size (mm)	Stroke range (mm)	N	P	S	Without rod boot		With rod boot (Single side)						(Both sides)
					H	ZZ	d	e	f	h	L	ZZ	ZZ
40	Up to 500	27	1/4	84	51	186	56	43	11.2	59	1/4 Stroke	194	202
50	Up to 600	30	3/8	90	58	206	64	52	11.2	66	1/4 Stroke	214	222
63	Up to 600	31	3/8	98	58	214	64	52	11.2	66	1/4 Stroke	222	230
80	Up to 750	37	1/2	116	71	258	76	65	12.5	80	1/4 Stroke	267	276
100	Up to 750	40	1/2	126	72	270	76	65	14.0	81	1/4 Stroke	279	288

Note 1) Operating temperature range of model with built-in magnet: −10°C to 60°C
Note 2) For model with built-in magnet, consider the minimum stroke suitable to install the auto switches.

Axial Foot: CA2WL



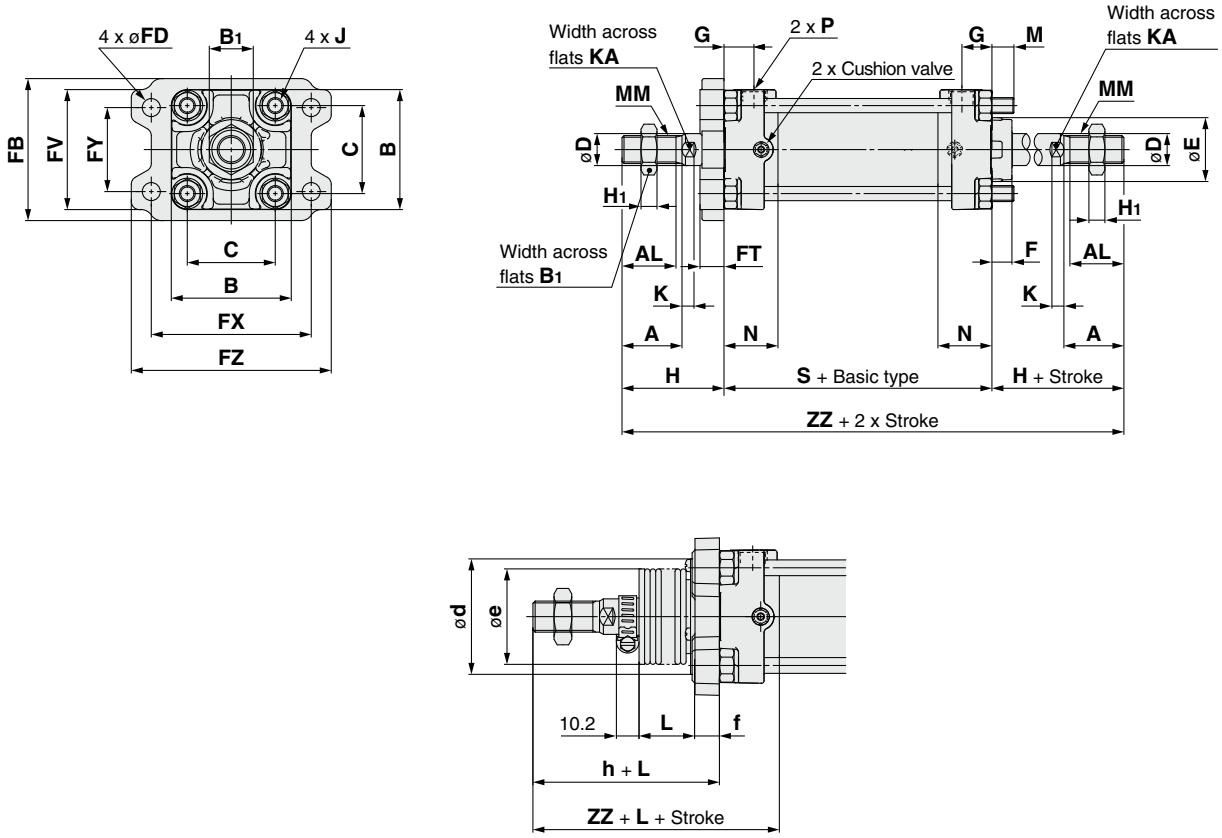
(mm)

Bore size (mm)	Stroke range (mm)	A	AL	B	B_1	C	D	E	F	G	H_1	J	K	KA	LD	LH	LS	LT	LX
40	Up to 500	30	27	60	22	44	16	32	10	15	8	M8 x 1.25	6	14	9	40	138	3.2	42
50	Up to 600	35	32	70	27	52	20	40	10	17	11	M8 x 1.25	7	18	9	45	144	3.2	50
63	Up to 600	35	32	85	27	64	20	40	10	17	11	M10 x 1.25	7	18	11.5	50	166	3.2	59
80	Up to 750	40	37	102	32	78	25	52	14	21	13	M12 x 1.75	10	22	13.5	65	204	4.5	76
100	Up to 750	40	37	116	41	92	30	52	14	21	16	M12 x 1.75	10	26	13.5	75	212	6	92

Bore size (mm)	Stroke range (mm)	LY	MM	N	P	S	X	Y	Without rod boot		With rod boot (Single side)						(Both sides)
									H	ZZ	d	e	f	h	L	ZZ	ZZ
40	Up to 500	70	M14 x 1.5	27	1/4	84	27	13	51	186	56	43	11.2	59	1/4 Stroke	194	202
50	Up to 600	80	M18 x 1.5	30	3/8	90	27	13	58	206	64	52	11.2	66	1/4 Stroke	214	222
63	Up to 600	93	M18 x 1.5	31	3/8	98	34	16	58	214	64	52	11.2	66	1/4 Stroke	222	230
80	Up to 750	116	M22 x 1.5	37	1/2	116	44	16	71	258	76	65	12.5	80	1/4 Stroke	267	276
100	Up to 750	133	M26 x 1.5	40	1/2	126	43	17	72	270	76	65	14.0	81	1/4 Stroke	279	288

Note 1) Operating temperature range of model with built-in magnet: –10°C to 60°C
Note 2) For model with built-in magnet, consider the minimum stroke suitable to install the auto switches.

Rod Flange: CA2WF



(mm)

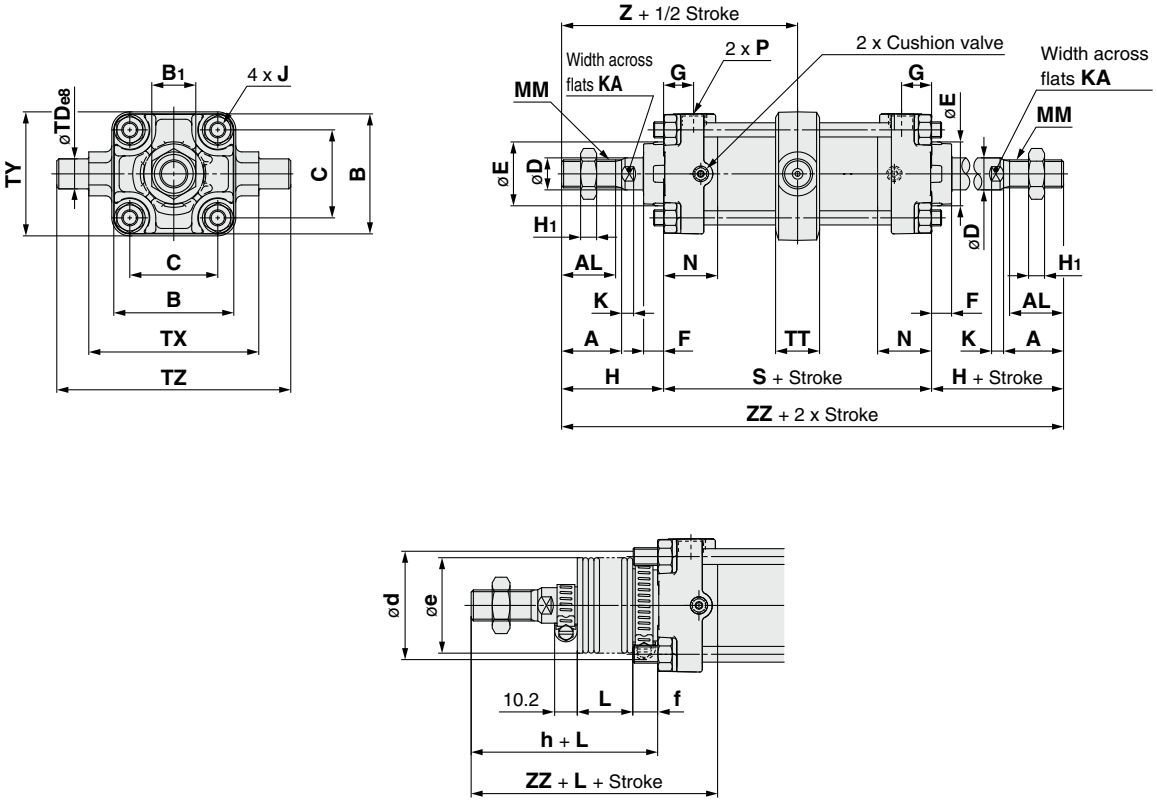
Bore size (mm)	Stroke range (mm)	A	AL	B	B_1	C	D	E	FB	FD	FT	FV	FX	FY	FZ	G	H_1	J	K	KA	M
40	Up to 500	30	27	60	22	44	16	32	71	9	12	60	80	42	100	15	8	M8 x 1.25	6	14	11
50	Up to 600	35	32	70	27	52	20	40	81	9	12	70	90	50	110	17	11	M8 x 1.25	7	18	11
63	Up to 600	35	32	85	27	64	20	40	101	11.5	15	86	105	59	130	17	11	M10 x 1.25	7	18	14
80	Up to 750	40	37	102	32	78	25	52	119	13.5	18	102	130	76	160	21	13	M12 x 1.75	10	22	17
100	Up to 750	40	37	116	41	92	30	52	133	13.5	18	116	150	92	180	21	16	M12 x 1.75	10	26	17

Bore size (mm)	Stroke range (mm)	MM	N	P	S	Without rod boot		With rod boot (Single side)						Both sides
						H	ZZ	d*	e	f	h	L	ZZ	ZZ
40	Up to 500	M14 x 1.5	27	1/4	84	51	186	52	43	15	59	1/4 Stroke	194	202
50	Up to 600	M18 x 1.5	30	3/8	90	58	206	58	52	15	66	1/4 Stroke	214	222
63	Up to 600	M18 x 1.5	31	3/8	98	58	214	58	52	17.5	66	1/4 Stroke	222	230
80	Up to 750	M22 x 1.5	37	1/2	116	71	258	80	65	21.5	80	1/4 Stroke	267	276
100	Up to 750	M26 x 1.5	40	1/2	126	72	270	80	65	21.5	81	1/4 Stroke	279	288

★ For installing an air cylinder, when a hole must be made to accommodate the rod portion, make sure to machine a hole that is larger than the outer diameter of the boot mounting bracket ød.

Note 1) Operating temperature range of model with built-in magnet: –10°C to 60°C
Note 2) For model with built-in magnet, consider the minimum stroke suitable to install the auto switches.

Center Trunnion: CA2WT



(mm)

Bore size (mm)	Stroke range (mm)	A	AL	B	B_1	C	D	E	F	G	H_1	J	K	KA	MM	N	P	S	TD_{e8}
40	Up to 500	30	27	60	22	44	16	32	10	15	8	M8 x 1.25	6	14	M14 x 1.5	27	1/4	84	$15^{-0.032}_{-0.059}$
50	Up to 600	35	32	70	27	52	20	40	10	17	11	M8 x 1.25	7	18	M18 x 1.5	30	3/8	90	$15^{-0.032}_{-0.059}$
63	Up to 600	35	32	85	27	64	20	40	10	17	11	M10 x 1.25	7	18	M18 x 1.5	31	3/8	98	$18^{-0.032}_{-0.059}$
80	Up to 750	40	37	102	32	78	25	52	14	21	13	M12 x 1.75	10	22	M22 x 1.5	37	1/2	116	$25^{-0.040}_{-0.073}$
100	Up to 750	40	37	116	41	92	30	52	14	21	16	M12 x 1.75	10	26	M26 x 1.5	40	1/2	126	$25^{-0.040}_{-0.073}$

Bore size (mm)	Bore size (mm)	TT	TX	TY	TZ	Without rod boot			With rod boot (Single side)							(Both sides)	
						H	Z	ZZ	d	e	f	h	L	Z	ZZ	Z	ZZ
40	Up to 500	22	85	62	117	51	93	186	56	43	11.2	59	1/4 Stroke	101	194	101	202
50	Up to 600	22	95	74	127	58	103	206	64	52	11.2	66	1/4 Stroke	111	214	111	222
63	Up to 600	28	110	90	148	58	107	214	64	52	11.2	66	1/4 Stroke	115	222	115	230
80	Up to 750	34	140	110	192	71	129	258	76	65	12.5	80	1/4 Stroke	138	267	138	276
100	Up to 750	40	162	130	214	72	135	270	76	65	14.0	81	1/4 Stroke	144	279	144	288

∗ Do not disassemble the trunnion type. Refer to page 29.

Note 1) Operating temperature range of model with built-in magnet: –10°C to 60°C

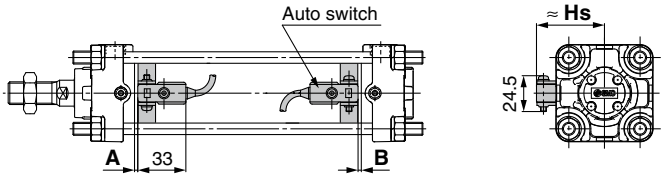
Note 2) For model with built-in magnet, consider the minimum stroke suitable to install the auto switches.

Auto Switch Mounting 1

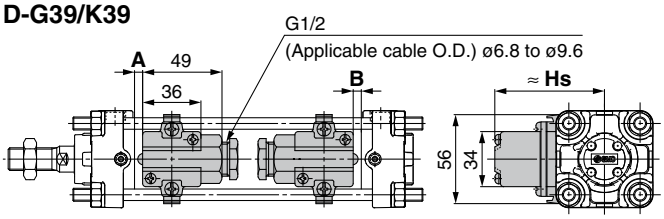
Auto Switch Proper Mounting Position (Detection at stroke end) and Its Mounting Height

<Band mounting>

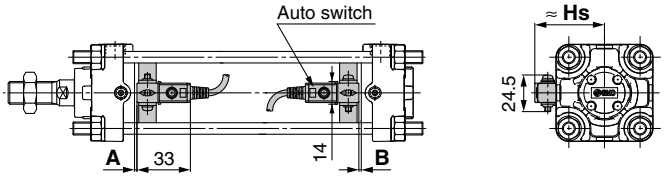
D-B5□/B64/B59W



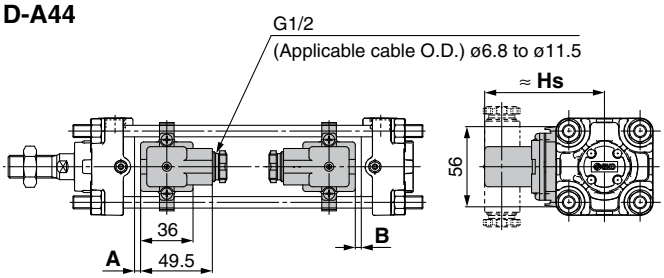
D-A3□
D-G39/K39



D-G5□/K59 **D-G5BAL**
D-G5□W/K59W **D-G59F/G5NTL**

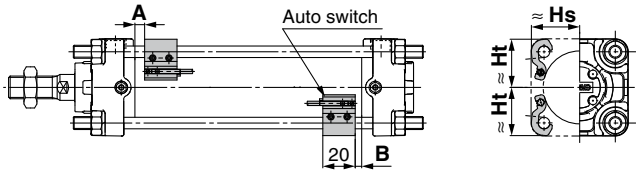


D-A44

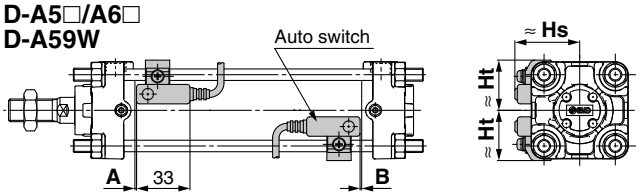


<Tie-rod mounting>

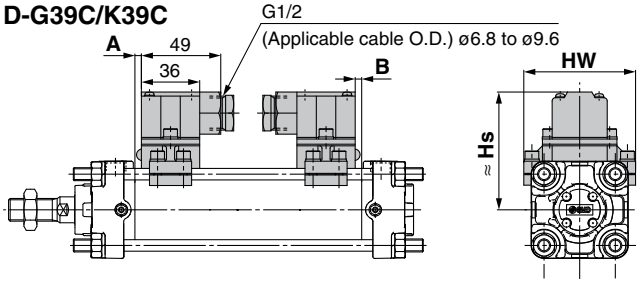
D-A9□/A9□V **D-Z7□/Z80**
D-M9□/M9□V **D-Y59□/Y69□/Y7P/Y7PV**
D-M9□W/M9□WV **D-Y7□W/Y7□WV**
D-M9□A/M9□AV **D-Y7BA**



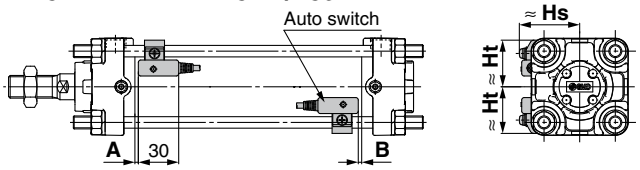
D-A5□/A6□
D-A59W



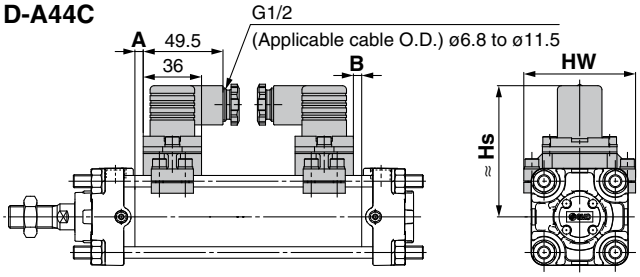
D-A3□C
D-G39C/K39C



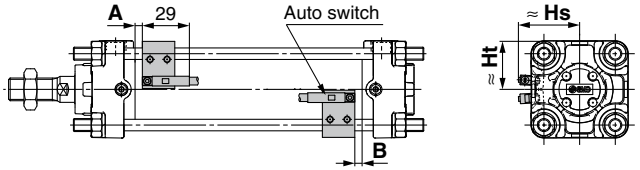
D-F5□/J5□ **D-F5□W/J59W**
D-F5NT **D-F5BA/F59F**



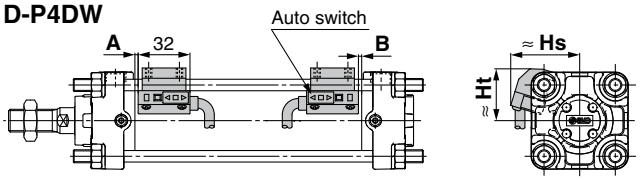
D-A44C



D-P3DW



D-P4DW



Series CA2
Auto Switch Mounting 2

Auto Switch Proper Mounting Position (Detection at stroke end) and Its Mounting Height

Auto Switch Proper Mounting Position

(mm)

Auto switch model / Bore size (mm)	D-M9□ D-M9□V D-M9□W D-M9□WV D-M9□A D-M9□AV		D-A9□ D-A9□V D-J51		D-Y59□ D-Y69□ D-Y7P D-Y7PV D-Y7□W D-Y7□WV D-Y7BA D-Z7□ D-Z80 D-B59W		D-P3DW		D-P4DW		D-F5□ D-J59 D-F59F D-F5□W D-J59W D-F5BA		D-A59W		D-F5NT		D-G39 D-G39C D-K39 D-K39C D-A5□ D-A6□ D-A3□ D-A3□C D-A44 D-A44C		D-G5□ D-K59 D-G5NT D-G5□W D-K59W D-G5BA D-G59F		D-B5□ D-B64	
	A	B	A	B	A	B	A	B	A	B	A	B	A	B	A	B	A	B	A	B	A	B
40	9	9	5	5	2.5	2.5	4.5	4.5	2	2	5.5	5.5	3	3	10.5	10.5	0	0	1	1	0	0
50	9.5	8.5	5.5	4.5	3	2	5	4	2.5	1.5	6	5	3.5	2.5	11	10	0	0	1.5	0.5	0	0
63	12.5	11.5	8.5	7.5	6	5	3	2.5	5.5	4.5	9	8	6.5	5.5	14	13	2.5	1.5	4.5	3.5	3	2
80	16.5	13.5	12.5	9.5	10	7	7.5	4	9.5	6.5	13	10	10.5	7.5	18	15	6.5	3.5	8.5	5.5	7	4
100	18	16	14	12	11.5	9.5	9	6.5	11	9	14.5	12.5	12	10	19.5	17.5	8	6	10	8	8.5	6.5

Note) Adjust the auto switch after confirming the operating conditions in the actual setting.

Auto Switch Mounting Height

(mm)

Auto switch model / Bore size (mm)	D-A9□ D-M9□ D-M9□W D-M9□A		D-A9□V		D-M9□V D-M9□WV D-M9□AV		D-Z7□ D-Z80 D-Y59□ D-Y7P D-Y7BA D-Y7□W		D-Y69□ D-Y7PV D-Y7□WV		D-P3DW		D-P4DW		D-B5□ D-B64 D-B59W D-G5□ D-K59 D-G5NTL D-G5□W D-K59W D-G5BAL D-G59F		D-A3□ D-G39 D-K39		D-A44		D-A5□ D-A6□ D-A59W		D-F5□ D-J59 D-F5□W D-J59W D-F5BA D-F59F D-F5NT		D-A3□C D-G39C D-K39C		D-A44C	
	Hs	Ht	Hs	Ht	Hs	Ht	Hs	Ht	Hs	Ht	Hs	Ht	Hs	Ht	Hs		Hs		Hs		Hs	Ht	Hs	Ht	Hs	Ht	Hs	Ht
40	30	30	31	30	34	30	30	30	30	30	38	30	42.5	33	37		71.5		81.5		38.5	31.5	38	31.5	73	69	81	69
50	34	34	35	34	38	34	34	34	34	34	42	34	46.5	37.5	42		76.5		86.5		42	35.5	42	35.5	78.5	77	86.5	77
63	41	41	41.5	41	44	41	41	41	41	41	49	41	52	43	49		83.5		93.5		46.5	43	47	43	85.5	91	93.5	91
80	49.5	49	50	49	52.5	49	49.5	49	49.5	49	56	49	58.5	51.5	57.5		92		102		53.5	51	53.5	51	94	107	102	107
100	56.5	56	58.5	56	61	56	56.5	55.5	57.5	55.5	65	56	66	58.5	68		102.5		112.5		61.5	57.5	61	57.5	104	121	112	121

Minimum Stroke for Auto Switch Mounting

n: Number of auto switches (mm)

Auto switch model	Number of auto switches		Brackets other than center trunnion	Center trunnion				
				ø40	ø50	ø63	ø80	ø100
D-A9□	2 (Different surfaces and same surface) 1		15	75		80	85	90
	n		$15 + 40\frac{(n-2)}{2}$ (n = 2, 4, 6, 8···)	$75 + 40\frac{(n-4)}{2}$ (n = 4, 8, 12, 16···)		$80 + 40\frac{(n-4)}{2}$ (n = 4, 8, 12, 16···)	$85 + 40\frac{(n-4)}{2}$ (n = 4, 8, 12, 16···)	$90 + 40\frac{(n-4)}{2}$ (n = 4, 8, 12, 16···)
D-A9□V	2 (Different surfaces and same surface) 1		10	50		55	60	65
	n		$10 + 30\frac{(n-2)}{2}$ (n = 2, 4, 6, 8···)	$50 + 30\frac{(n-4)}{2}$ (n = 4, 8, 12, 16···)		$55 + 30\frac{(n-4)}{2}$ (n = 4, 8, 12, 16···)	$60 + 30\frac{(n-4)}{2}$ (n = 4, 8, 12, 16···)	$65 + 30\frac{(n-4)}{2}$ (n = 4, 8, 12, 16···)
D-M9□ D-M9□W	2 (Different surfaces and same surface) 1		15	80		85	90	95
	n		$15 + 40\frac{(n-2)}{2}$ (n = 2, 4, 6, 8···)	$80 + 40\frac{(n-4)}{2}$ (n = 4, 8, 12, 16···)		$85 + 40\frac{(n-4)}{2}$ (n = 4, 8, 12, 16···)	$90 + 40\frac{(n-4)}{2}$ (n = 4, 8, 12, 16···)	$95 + 40\frac{(n-4)}{2}$ (n = 4, 8, 12, 16···)
D-M9□V D-M9□WV	2 (Different surfaces and same surface) 1		10	55		60	65	70
	n		$10 + 30\frac{(n-2)}{2}$ (n = 2, 4, 6, 8···)	$55 + 30\frac{(n-4)}{2}$ (n = 4, 8, 12, 16···)		$60 + 30\frac{(n-4)}{2}$ (n = 4, 8, 12, 16···)	$65 + 30\frac{(n-4)}{2}$ (n = 4, 8, 12, 16···)	$70 + 30\frac{(n-4)}{2}$ (n = 4, 8, 12, 16···)
D-M9□A	2 (Different surfaces and same surface) 1		15	80		85	95	100
	n		$15 + 40\frac{(n-2)}{2}$ (n = 2, 4, 6, 8···)	$80 + 40\frac{(n-4)}{2}$ (n = 4, 8, 12, 16···)		$85 + 40\frac{(n-4)}{2}$ (n = 4, 8, 12, 16···)	$95 + 40\frac{(n-4)}{2}$ (n = 4, 8, 12, 16···)	$100 + 40\frac{(n-4)}{2}$ (n = 4, 8, 12, 16···)
D-M9□AV	2 (Different surfaces and same surface) 1		10	60		65	70	75
	n		$10 + 30\frac{(n-2)}{2}$ (n = 2, 4, 6, 8···)	$60 + 30\frac{(n-4)}{2}$ (n = 4, 8, 12, 16···)		$65 + 30\frac{(n-4)}{2}$ (n = 4, 8, 12, 16···)	$70 + 30\frac{(n-4)}{2}$ (n = 4, 8, 12, 16···)	$75 + 30\frac{(n-4)}{2}$ (n = 4, 8, 12, 16···)
D-A5□/A6 D-F5□/J5 D-F5□W/J59W D-F5BA/F59F	2 (Different surfaces and same surface) 1		15	90		100	110	120
	n (Same surface)		$15 + 55\frac{(n-2)}{2}$ (n = 2, 4, 6, 8···)	$90 + 55\frac{(n-4)}{2}$ (n = 4, 8, 12, 16···)		$100 + 55\frac{(n-4)}{2}$ (n = 4, 8, 12, 16···)	$110 + 55\frac{(n-4)}{2}$ (n = 4, 8, 12, 16···)	$120 + 55\frac{(n-4)}{2}$ (n = 4, 8, 12, 16···)
D-A59W	2 (Different surfaces and same surface) 1		20	90		100	110	120
	n (Same surface)		$20 + 55\frac{(n-2)}{2}$ (n = 2, 4, 6, 8···)	$90 + 55\frac{(n-4)}{2}$ (n = 4, 8, 12, 16···)		$100 + 55\frac{(n-4)}{2}$ (n = 4, 8, 12, 16···)	$110 + 55\frac{(n-4)}{2}$ (n = 4, 8, 12, 16···)	$120 + 55\frac{(n-4)}{2}$ (n = 4, 8, 12, 16···)
	1		15	90		100	110	120
D-F5NT	2 (Different surfaces and same surface) 1		25	110		120	130	140
	n (Same surface)		$25 + 55\frac{(n-2)}{2}$ (n = 2, 4, 6, 8···)	$110 + 55\frac{(n-4)}{2}$ (n = 4, 8, 12, 16···)		$120 + 55\frac{(n-4)}{2}$ (n = 4, 8, 12, 16···)	$130 + 55\frac{(n-4)}{2}$ (n = 4, 8, 12, 16···)	$140 + 55\frac{(n-4)}{2}$ (n = 4, 8, 12, 16···)
D-B5□/B64 D-G5□/K59 D-G5□W D-K59W D-G5BA D-G59F D-G5NT	2	Different surfaces	15	90		100	110	
		Same surface	75					
	n	Different surfaces	$15 + 50\frac{(n-2)}{2}$ (n = 2, 4, 6, 8···)	$90 + 50\frac{(n-4)}{2}$ (n = 4, 8, 12, 16···)		$100 + 50\frac{(n-4)}{2}$ (n = 4, 8, 12, 16···)	$110 + 50\frac{(n-4)}{2}$ (n = 4, 8, 12, 16···)	
		Same surface	75 + 50 (n – 2) (n = 2, 3, 4···)	90 + 50 (n – 2) (n = 2, 4, 6, 8···)		100 + 50 (n – 2) (n = 2, 4, 6, 8···)	110 + 50 (n – 2) (n = 2, 4, 6, 8···)	
	1		10	90		100	110	
D-B59W	2	Different surfaces	20	90		100	110	
		Same surface	75					
	n	Different surfaces	$20 + 50\frac{(n-2)}{2}$ (n = 2, 4, 6, 8···)	$90 + 50\frac{(n-4)}{2}$ (n = 4, 8, 12, 16···)		$100 + 50\frac{(n-4)}{2}$ (n = 4, 8, 12, 16···)	$110 + 50\frac{(n-4)}{2}$ (n = 4, 8, 12, 16···)	
		Same surface	75 + 50 (n – 2) (n = 2, 3, 4···)	90 + 50 (n – 2) (n = 2, 4, 6, 8···)		100 + 50 (n – 2) (n = 2, 4, 6, 8···)	110 + 50 (n – 2) (n = 2, 4, 6, 8···)	
	1		15	90		100	110	
D-A3□ D-G39 D-K39	2	Different surfaces	35	75		80	90	
		Same surface	100	100		100	100	
	n	Different surfaces	35 + 30 (n – 2) (n = 2, 3, 4···)	75 + 30 (n – 2) (n = 2, 4, 6, 8···)		80 + 30 (n – 2) (n = 2, 4, 6, 8···)	90 + 30 (n – 2) (n = 2, 4, 6, 8···)	
		Same surface	100 + 100 (n – 2) (n = 2, 3, 4···)	100 + 100 (n – 2) (n = 2, 4, 6, 8···)				
	1		10	75		80	90	

Auto Switch Mounting 3

Minimum Stroke for Auto Switch Mounting

n: Number of auto switches (mm)

Auto switch model	Number of auto switches		Brackets other than center trunnion	Center trunnion				
				ø40	ø50	ø63	ø80	ø100
D-A44	2	Different surfaces	35	75		80	90	
		Same surface	55					
	n	Different surfaces	35 + 3 (n – 2) (n = 2, 3, 4···)	75 + 30 (n – 2) (n = 2, 4, 6, 8···)		80 + 30 (n – 2) (n = 2, 4, 6, 8···)	90 + 30 (n – 2) (n = 2, 4, 6, 8···)	
		Same surface	55 + 50 (n – 2) (n = 2, 3, 4···)	75 + 50 (n – 2) (n = 2, 4, 6, 8···)		80 + 50 (n – 2) (n = 2, 4, 6, 8···)	90 + 50 (n – 2) (n = 2, 4, 6, 8···)	
	1		10	75		80	90	
D-A3□C D-G39C D-K39C	2	Different surfaces	20	75		80	90	
		Same surface	100	100		100	100	
	n	Different surfaces	20 + 35 (n – 2) (n = 2, 3, 4···)	75 + 35 (n – 2) (n = 2, 4, 6, 8···)		80 + 35 (n – 2) (n = 2, 4, 6, 8···)	90 + 35 (n – 2) (n = 2, 4, 6, 8···)	
		Same surface	100 + 100 (n – 2) (n = 2, 3, 4, 5···)	100 + 100 (n – 2) (n = 2, 4, 6, 8···)				
	1		10	75		80	90	
D-A44C	2	Different surfaces	20	75		80	90	
		Same surface	55					
	n	Different surfaces	20 + 35 (n – 2) (n = 2, 3, 4···)	75 + 35 (n – 2) (n = 2, 4, 6, 8···)		80 + 35 (n – 2) (n = 2, 4, 6, 8···)	90 + 35 (n – 2) (n = 2, 4, 6, 8···)	
		Same surface	55 + 50 (n – 2) (n = 2, 3, 4···)	75 + 50 (n – 2) (n = 2, 4, 6, 8···)		80 + 50 (n – 2) (n = 2, 4, 6, 8···)	90 + 50 (n – 2) (n = 2, 4, 6, 8···)	
	1		10	75		80	90	
D-Z7□/Z80 D-Y59□/Y7P D-Y7□W	2 (Different surfaces and same surface) 1		15	80	85	90	95	105
	n		$15 + 40\frac{(n-2)}{2}$ (n = 2, 4, 6, 8···)	$80 + 40\frac{(n-4)}{2}$ (n = 4, 8, 12, 16···)	$85 + 40\frac{(n-4)}{2}$ (n = 4, 8, 12, 16···)	$90 + 40\frac{(n-4)}{2}$ (n = 4, 8, 12, 16···)	$95 + 40\frac{(n-4)}{2}$ (n = 4, 8, 12, 16···)	$105 + 40\frac{(n-4)}{2}$ (n = 4, 8, 12, 16···)
D-Y69□/Y7PV D-Y7□WV	2 (Different surfaces and same surface) 1		10	65		75	80	90
	n		$10 + 30\frac{(n-2)}{2}$ (n = 2, 4, 6, 8···)	$65 + 30\frac{(n-4)}{2}$ (n = 4, 8, 12, 16···)		$75 + 30\frac{(n-4)}{2}$ (n = 4, 8, 12, 16···)	$80 + 30\frac{(n-4)}{2}$ (n = 4, 8, 12, 16···)	$90 + 30\frac{(n-4)}{2}$ (n = 4, 8, 12, 16···)
D-Y7BA	2 (Different surfaces and same surface) 1		20	95		100	105	110
	n		$20 + 45\frac{(n-2)}{2}$ (n = 2, 4, 6, 8···)	$95 + 45\frac{(n-4)}{2}$ (n = 4, 8, 12, 16···)		$100 + 45\frac{(n-4)}{2}$ (n = 4, 8, 12, 16···)	$105 + 45\frac{(n-4)}{2}$ (n = 4, 8, 12, 16···)	$110 + 45\frac{(n-4)}{2}$ (n = 4, 8, 12, 16···)
D-P3DW	2 (Different surfaces and same surface) 1		15	85				
	n		$15 + 50\frac{(n-2)}{2}$ (n = 2, 4, 6, 8···)	$85 + 50\frac{(n-4)}{2}$ (n = 4, 8, 12, 16···)				
D-P4DW	2 (Different surfaces and same surface) 1		15	120		130	140	
	n		$15 + 65\frac{(n-2)}{2}$ (n = 2, 4, 6, 8···)	$120 + 65\frac{(n-4)}{2}$ (n = 4, 8, 12, 16···)		$130 + 65\frac{(n-4)}{2}$ (n = 4, 8, 12, 16···)	$140 + 65\frac{(n-4)}{2}$ (n = 4, 8, 12, 16···)	

Operating Range

(mm)

Auto switch model	Bore size				
	40	50	63	80	100
D-A9□/A9□V	7.5	8.5	9.5	9.5	10.5
D-M9□/M9□V D-M9□W/M9□WV D-M9□A/M9□AV	4.5	5	5.5	5	6
D-Z7□/Z80	8.5	7.5	9.5	9.5	10.5
D-A3□/A44 D-A3□C/A44C	9	10	11	11	11
D-A5□/A6□					
D-B5□/B64					
D-A59W	13	13	14	14	15
D-B59W	14	14	17	16	18

(mm)

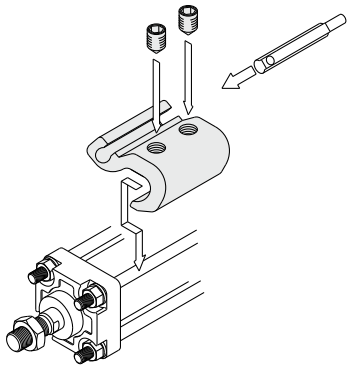
Auto switch model	Bore size				
	40	50	63	80	100
D-Y59□/Y69□ D-Y7P/Y7□V D-Y7□W/Y7□WV D-Y7BA	8	7	5.5	6.5	6.5
D-F5□/J5□/F5□W D-J59W/F5BA D-F5NT/F59F	4	4	4.5	4.5	4.5
D-G5□/K59/G5□W D-K59W/G5BA D-G5NT/G59F	5	6	6.5	6.5	7
D-G5NBL	35	35	40	40	40
D-G39/K39 D-G39C/K39C	9	9	10	10	11
D-P3DW	4.5	5	6	5.5	6
D-P4DW	4	4	4.5	4	4.5

∗ Values which include hysteresis are for guideline purposes only, they are not a guarantee (assuming approximately ±30% dispersion) and may change substantially depending on the ambient environment.

Auto Switch Mounting Brackets/Part No.

<Tie-rod mounting>

Auto switch model	Bore size (mm)				
	40	50	63	80	100
D-A9□/A9□V **D-M9□/M9□V** **D-M9□W/M9□WV** **D-M9□A/M9□AV**	BA7-040	BA7-040	BA7-063	BA7-080	BA7-080
D-A5□/A6□ **D-A59W** **D-F5□/J5□** **D-F5□W/J59W** **D-F59F/F5NT**	BT-04	BT-04	BT-06	BT-08	BT-08
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/Y7□WV** **D-Y7BA**	BA4-040	BA4-040	BA4-063	BA4-080	BA4-080
D-P3DW	BMB9-050S	BMB9-050S	BA9T-063S	BA9T-080S	BA9T-080S
D-P4DW	BAP2-040	BAP2-040	BAP2-063	BAP2-080	BAP2-080



∗ The figure shows the mounting example for the D-A9□(V)/M9□(V)/M9□W(V)/M9□A(V)L types.

<Band mounting>

Auto switch model	Bore size (mm)				
	40	50	63	80	100
D-A3□/A44 **D-G39/K39**	BDS-04M	BDS-05M	BMB1-063	BMB1-080	BMB1-100
D-B5□/B64 **D-B59W** **D-G5□/K59** **D-G5□W/K59W** **D-G59F** **D-G5NT** **D-G5NB**	BH2-040	BA5-050	BAF-06	BAF-08	BAF-10

Note 1) Auto switch brackets are included in the D-A3□C/A44C/G39C/K39C types. Specify the part number as follows depending on the cylinder size when ordering.
(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

[Stainless Steel Mounting Screw]

The following stainless steel mounting screw kit (including set screws) is also available. Use it in accordance with the operating environment.
(Since the auto switch mounting bracket is not included, order it separately.)
BBA1: For D-A5/A6/F5/J5 types
BBA3: For D-B5/B6/G5/K5 types

Note 2) Refer to pages 1357 and 1365 in Best Pneumatics No. 2 for details on the BBA1 and BBA3.
The above stainless steel screws are used when a cylinder is shipped with D-F5BA or G5BA auto switches. When only an auto switch is shipped independently, the BBA1 or BBA3 is attached.

Note 3) When using the D-M9□A(V) or Y7BA, do not use the steel set screws which are included with the auto switch mounting brackets above (BA7-□□□, BA4-□□□). Order a stainless steel screw kit (BBA1) separately, and use the M4 x 6L stainless steel set screws included in the BBA1.

Note 4) There is a difference in the cylinder tube thickness depending on the cylinder model. When a band mounting type is used as an applicable auto switch and a cylinder model is changed, use caution.

Other than the applicable auto switches listed in "How to Order", the following auto switches can are mountable.

Refer to Best Pneumatics No.2 for detailed specifications.

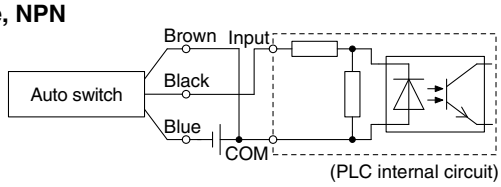
Type	Model	Electrical entry	Features
Reed	D-A93V/A96V	Grommet (Perpendicular)	—
	D-A90V		Without indicator light
	D-A53/A56/B53/Z73/Z76	Grommet (In-line)	—
	D-A67/Z80		Without indicator light
Solid state	D-M9NV/M9PV/M9BV	Grommet (Perpendicular)	—
	D-Y69A/Y69B/Y7PV		
	D-M9NWV/M9PWV/M9BWV		Diagnostic indication (2-color indication)
	D-Y7NWV/Y7PWV/Y7BWV		
	D-M9NAV/M9PAV/M9BAV		Water resistant (2-color)
	D-Y59A/Y59B/Y7P	Grommet (In-line)	—
	D-F59/F5P/J59		
	D-Y7NW/Y7PW/Y7BW		Diagnostic indication (2-color indication)
	D-F59W/F5PW/J59W		
	D-F5BA/Y7BA		Water resistant (2-color)
	D-F5NT/G5NT		With timer
	D-P5DW		Magnetic field resistant (2-color)

∗ With pre-wired connector is also available for solid state auto switches. For details, refer to pages 1328 and 1329 in Best Pneumatics No. 2.
∗ Normally closed (NC = b contact) solid state auto switches (D-F9G/F9H/Y7G/Y7H) are also available. For details, refer to pages 1290 and 1292 in Best Pneumatics No. 2.
∗ Wide range detection type, solid state auto switch (D-G5NBL) is also available. For details, refer to page 1320 in Best Pneumatics No. 2.

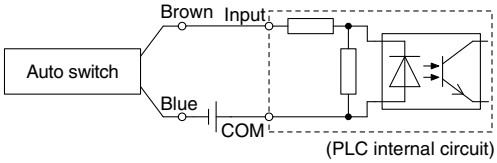
Prior to Use
Auto Switch Connection and Example

Sink Input Specifications

3-wire, NPN

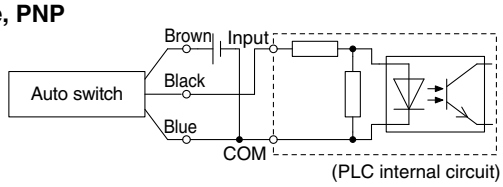


2-wire

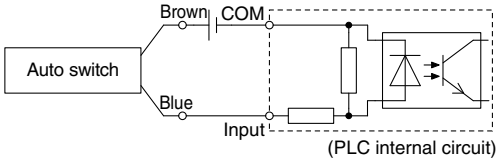


Source Input Specifications

3-wire, PNP



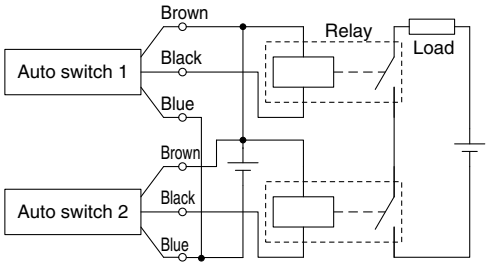
2-wire



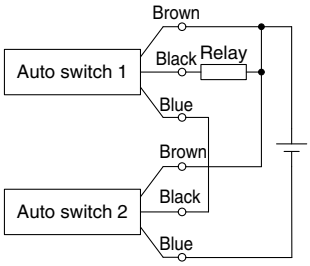
Connect according to the applicable PLC input specifications, as the connection method will vary depending on the PLC input specifications.

Example of AND (Series) and OR (Parallel) Connection

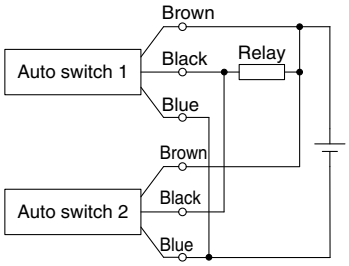
3-wire,
AND connection for NPN output
(Using relays)



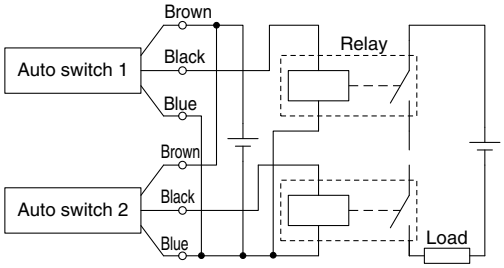
(Performed with auto switches only)



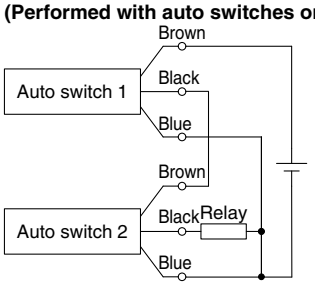
3-wire,
OR connection for NPN output



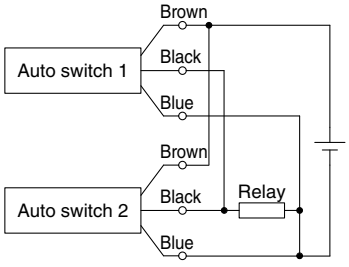
3-wire,
AND connection for PNP output
(Using relays)



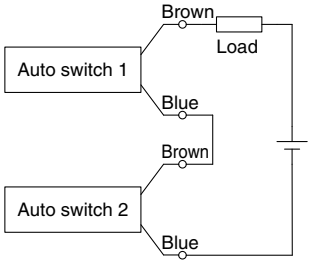
(Performed with auto switches only)



3-wire,
OR connection for PNP output



2-wire,
AND connection

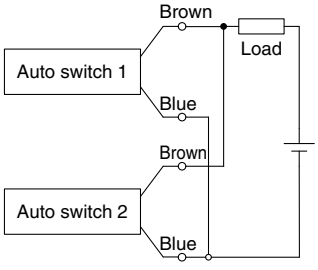


When two auto switches are connected in series, malfunction may occur because the load voltage will decrease in the ON state. The indicator lights will light up when both of the auto switches are in the ON state.

Load voltage at ON = Power supply voltage – Residual voltage x 2 pcs.
= 24 V – 4 V x 2 pcs.
= 16 V

Example: Power supply is 24 VDC
Auto switch internal voltage drop 4 V

2-wire,
AND connection



(Solid state)
When two auto switches are connected in parallel, malfunction may occur because the load voltage will increase in the OFF state.

(Reed)
Because there is no leakage current, the load voltage will not increase in the OFF state. However, depending on the number of auto switches in the ON state, the indicator lights may sometimes grow dim or not light up, due to the dispersion and reduction of the current flowing to the auto switches.

Load voltage at OFF = Leakage current x 2 pcs. x Load impedance
= 1 mA x 2 pcs. x 3 kΩ
= 6 V

Example: Load impedance is 3 kΩ.
Auto switch leakage current 1 mA

Simple Specials
-XA0 to -XA30: Change of Rod End Shape

These changes are dealt with Simple Specials System. Refer to Best Pneumatics No. 2 for details.

Change of Rod End Shape

Symbol
-XA0 to -XA30

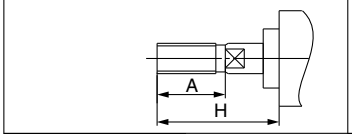
Applicable Series

Series	Description	Model	Action	Note
CA2	Air cylinder	CA2	Double acting, Single rod	
		CA2W	Double acting, Double rod	

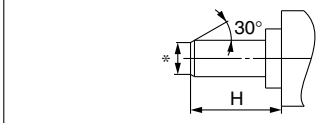
Precautions

1. SMC will make appropriate arrangements if no dimension, tolerance, or finish instructions are given in the diagram.
2. Standard dimensions marked with "*" will be as follows to the rod diameter (D). Enter any special dimension you desire.
   $D \leq 6 \rightarrow D - 1$ mm, $6 < D \leq 25 \rightarrow D - 2$ mm, $D > 25 \rightarrow D - 4$ mm
3. In the case of double rod type and single acting retraction type, enter the dimensions when the rod is retracted.
4. Only the single side of a double rod is able to manufacture.

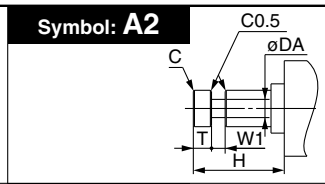
Symbol: A0



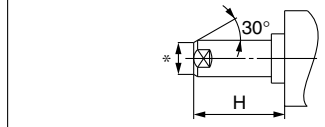
Symbol: A1



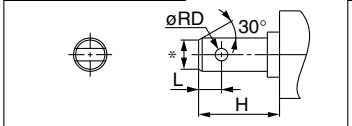
Symbol: A2



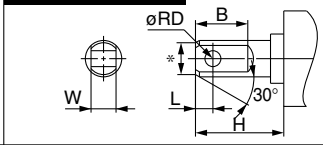
Symbol: A3



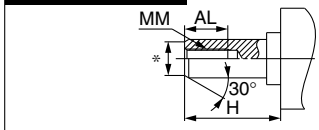
Symbol: A4



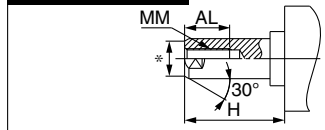
Symbol: A5



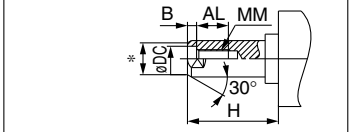
Symbol: A6



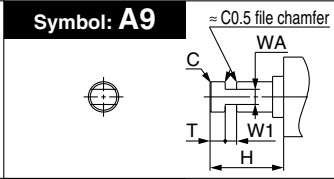
Symbol: A7



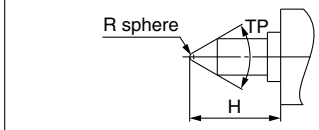
Symbol: A8



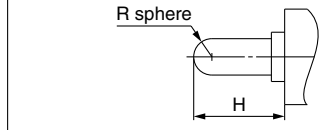
Symbol: A9



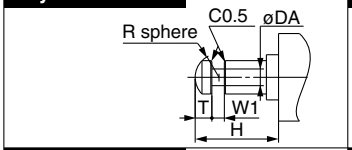
Symbol: A10



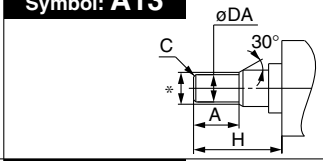
Symbol: A11



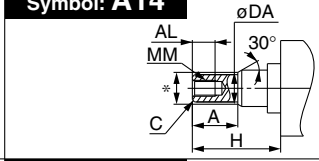
Symbol: A12



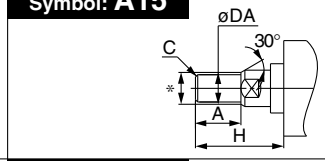
Symbol: A13



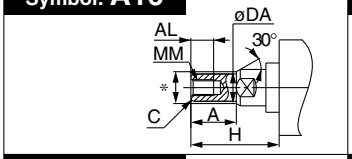
Symbol: A14



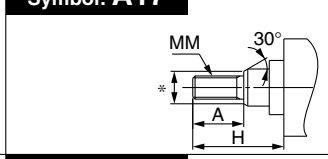
Symbol: A15



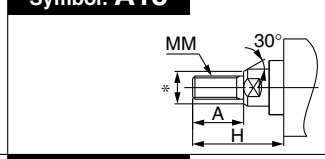
Symbol: A16



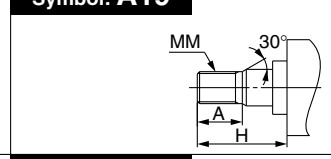
Symbol: A17



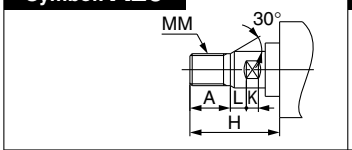
Symbol: A18



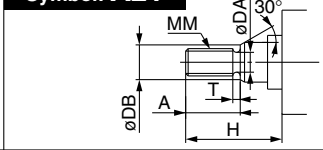
Symbol: A19



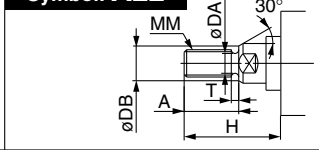
Symbol: A20



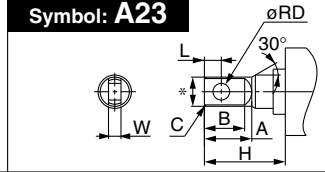
Symbol: A21



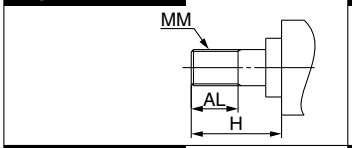
Symbol: A22



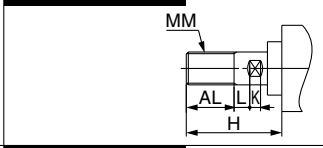
Symbol: A23



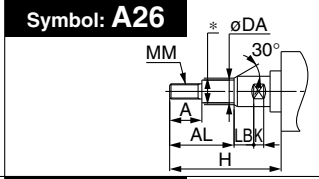
Symbol: A24



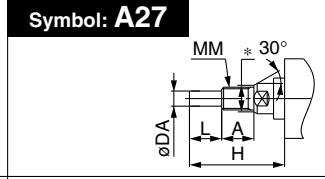
Symbol: A25



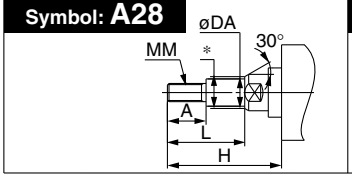
Symbol: A26



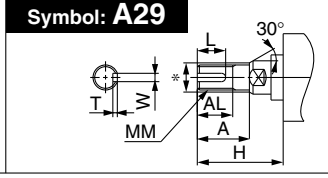
Symbol: A27



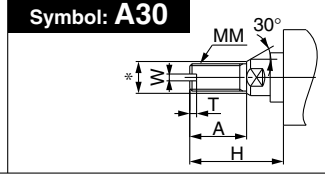
Symbol: A28



Symbol: A29



Symbol: A30



Simple Specials

These changes are dealt with Simple Specials System.

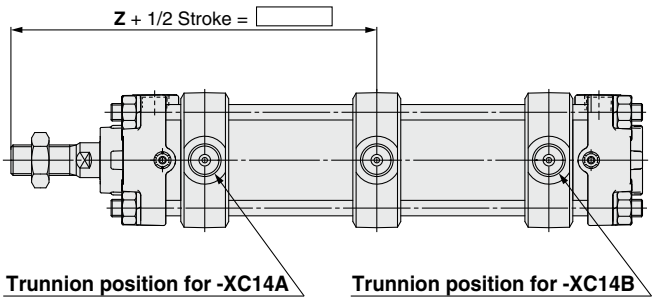
Symbol

Change of Trunnion Bracket Mounting Position -XC14

The position for mounting the trunnion bracket on the cylinder can be moved from the standard mounting position to any desired position.

Applicable Series

Series	Description	Model	Action	Note
CA2	Air cylinder	CA2	Double acting, Single rod	
		CA2W	Double acting, Double rod	



Precautions

1. Specify "Z + 1/2 Stroke" in the case the trunnion bracket position is not -XC14A, B or trunnion is not a center trunnion.
2. SMC will make appropriate arrangements if no dimension, tolerance, or finish instructions are given in the diagram.
3. The possible range of trunnion bracket mounting position is indicated in the table below.
4. Some trunnion mounting positions do not allow auto switch mounting. Please consult with SMC for more information.

(mm)

Symbol / Bore size	**Z** + 1/2 Stroke					
	For -XC14A	**For -XC14B**	**For -XC14**		Reference Standard (Center trunnion)	Minimum stroke
			Minimum	Maximum		
40	89	97 + Stroke	89.5	96.5 + Stroke	93 + 1/2 Stroke	1
50	99	107 + Stroke	99.5	106.5 + Stroke	103 + 1/2 Stroke	1
63	103	111 + Stroke	103.5	110.5 + Stroke	107 + 1/2 Stroke	1
80	125	133 + Stroke	125.5	132.5 + Stroke	129 + 1/2 Stroke	1
100	132	138 + Stroke	132.5	137.5 + Stroke	135 + 1/2 Stroke	1

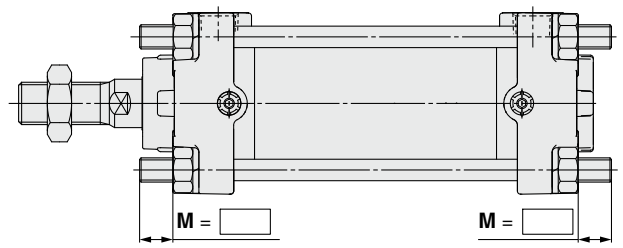
Symbol

Change of Tie-rod Length -XC15

Cylinder with M dimension for tie-rod length changed from the standard length.

Applicable Series

Series	Description	Model	Action	Note
CA2	Air cylinder	CA2	Double acting, Single rod	
		CA2W	Double acting, Double rod	



Precautions

1. To order, specify the M dimension as well as the part number.
2. SMC will make appropriate arrangements if no dimension, tolerance, or finish instructions are given in the diagram.
3. Tie-rod length changeable range is described in the below.
4. The M dimension of the bracket mounting side of flange (F, G), clevis (C, D) types cannot be specified.

Tie-rod Length Changeable Range (mm)

Bore size	All bore size
M Min.	0
M Max.	300

Series CA2
Made to Order 1

Please contact SMC for detailed dimensions, specifications and lead times.

Made to Order

1 Tie-rod, Cushion Valve, Tie-rod Nut, etc. Made of Stainless Steel

Symbol
-XC7

When using in locations where the rust generation or corrosion likelihood exists, the standard parts material have been partly changed to the stainless steel.

Applicable Series

Series	Description	Model	Action	Note
CA2	Air cylinder	CA2	Double acting, Single rod	
		CA2W	Double acting, Double rod	

How to Order

Standard model no. **−XC7**

Tie-rod, cushion valve, tie-rod nut, etc. made of stainless steel

Specifications

Component parts changed to stainless steel	Tie-rod, Tie-rod nut, Mounting bracket nut, Spring washer, Cushion valve, Lock nut
Additional specifications	Same as standard type
Dimensions	Same as standard type

2 Adjustable Stroke Cylinder/Adjustable Extension Type

Symbol
-XC8

It adjusts the extending stroke by the stroke adjustable mechanism equipped in the head side.
(After the stroke is adjusted, with cushion on both sides is altered to single-sided, with cushion.)

Applicable Series

Series	Description	Model	Action	Note
CA2	Air cylinder	CA2	Double acting, Single rod	

How to Order

CA2 | **Mounting** | **Bore size** | **−** | **Stroke** | **Suffix** | **Stroke adjustment symbol** **Z −XC8**

∗ Except head flange and clevis types

Adjustable stroke cylinder/Adjustable extension type

Specifications

Series	Stroke adjustment symbol	Stroke adjustment range (mm)
CA2-□Z	A	0 to 25
	B	0 to 50

Note) Specifications other than above are the same as the standard type.

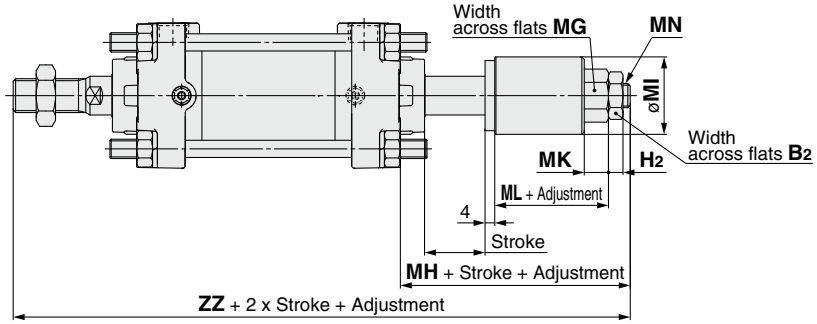
Precautions

⚠Warning

1. When the cylinder is operating, if something gets caught between the stopper bracket for adjusting the stroke and the cylinder body, it could cause bodily injury or damage the peripheral equipment. Therefore, take preventive measures as necessary, such as installing a protective cover.

2. To adjust the stroke, make sure to secure the wrench flats of the stopper bracket by a wrench, etc. before loosening the lock nut. If the lock nut is loosened without securing the stopper bracket, be aware that the area that joins the load to the piston rod or the area in which the piston rod is joined with the load side and the stopper bracket side could loosen first. It may cause an accident or malfunction.

Dimensions (Dimensions other than below are the same as the standard type.)



Dimensions

(mm)

Symbol / Bore size	Stroke range	B	H2	MN	ZZ	MG	MH	MI	MK	ML
ø40	Up to 500	60	6	M10 x 1.25	180	19	45	32	10	22
ø50	Up to 600	70	8	M14 x 1.5	197	24	49	38	13	24
ø63	Up to 600	85	8	M14 x 1.5	205	24	49	38	13	24
ø80	Up to 750	102	10	M16 x 1.5	253	27	66	45	14	32
ø100	Up to 750	116	12	M20 x 1.5	267	32	69	55	17	35

Made to Order 2

Please contact SMC for detailed dimensions, specifications and lead times.

Made to Order

3 Rod Trunnion

Symbol
-XC30

This cylinder shortens the distance between the fulcrum and the rod end by installing a trunnion bracket in front of the rod cover.

Applicable Series

Series	Description	Model	Action	Note
CA2	Air cylinder	CA2	Double acting, Single rod	

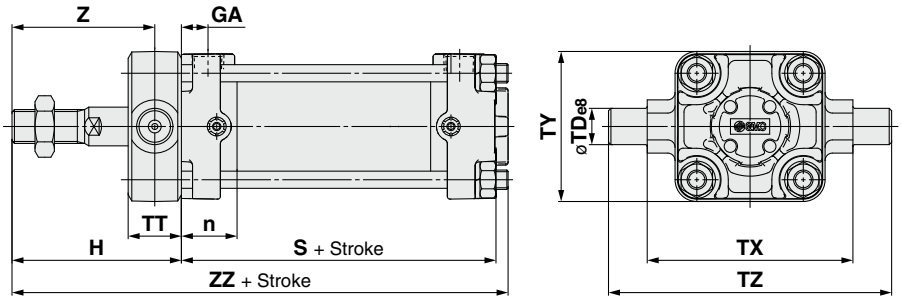
How to Order

CA2 T | **Standard model no.** | **−XC30**

- **T**: Trunnion bracket
- **XC30**: Rod trunnion

Specifications: Same as standard type

Dimensions (Dimensions other than below are the same as the standard type.)



Dimensions

(mm)

Symbol / Bore size	Stroke range	n	GA	H	S	TDe8	TT	TX	TY	TZ	Z	ZZ
ø**40**	Up to 1000	23	11	66	80	15 $^{-0.032}_{-0.059}$	22	85	62	117	55	151
ø**50**	Up to 1000	26	13	71	86	15 $^{-0.032}_{-0.059}$	22	95	74	127	60	163
ø**63**	Up to 1000	27	13	79	94	18 $^{-0.032}_{-0.059}$	28	110	90	148	65	179
ø**80**	Up to 1000	32	16	94.5	111	25 $^{-0.040}_{-0.073}$	34	140	110	192	77.5	212.5
ø**100**	Up to 1000	35	16	100	121	25 $^{-0.040}_{-0.073}$	40	162	130	214	80	229

Series CA2
Specific Product Precautions

Be sure to read before handling. Refer to back cover for Safety Instructions, "Handling Precautions for SMC Products" (M-E03-3) and the Operation Manual for Actuator Precautions and Auto Switch Precautions. Please download it via our website, http://www.smcworld.com

Operating Precautions

⚠Caution

1. Do not open the cushion valve beyond the stopper.
A retaining ring is installed as a cushion valve retention mechanism. Do not open the cushion valve beyond it.
If not operated in accordance with the above precautions, the cushion valve may be ejected from the cover when air pressure is supplied.

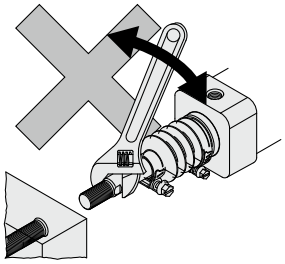
2. Use the air cushion at the end of cylinder stroke.
Otherwise, the tie-rod or piston rod assembly will be damaged.

⚠Caution

1. Do not use a pneumatic type as an air-hydro cylinder. It can cause oil leakage.

2. Do not rotate the piston rod when the rod boot is fixed.
Before rotating the piston rod, loosen the band to avoid twisting the rod boot.

3. Install the rod boot with the breathing hole facing downwards or in a direction suitable to prevent dust, moisture etc. from entering easily into the rod boot.



Disassembly/Replacement

⚠Caution

1. Use a socket wrench when the bracket is replaced.
If other tools are used, the nut or other parts may be deformed or the work efficiency may decrease.
For applicable sockets, refer to the table below.

Bore size (mm)	Nut	Width across flats	Socket	Tightening torque (N·m)
40, 50	DA00040 (JIS B1181 Class 3 Intermediate M8 x 1.25)	13	JIS B4636 + Two-angle socket 13	7.4
63	DA00010 (JIS B1181 Class 3 Intermediate M10 x 1.25)	17	JIS B4636 + Two-angle socket 17	20
80, 100	DA00131 (JIS B1181 Class 3 Intermediate M12 x 1.75)	19	JIS B4636 +Two-angle socket 19	29

Disassembly/Replacement

⚠Caution

2. Do not replace the bushing.
As the bushing is press-fit into the cover, replace the cover assembly when the bushing must be replaced.

3. When a seal is replaced, apply grease to the new seal before it is assembled.
Operation of the cylinder without greasing will result in extreme abrasion of the seal, causing premature air leakage.

4. Do not disassemble the trunnion type cylinder, as it requires accuracy in assembly.
The trunnion type cylinder may lose dimensional accuracy and malfunction when it is disassembled and reassembled because the axial center of the trunnion and that of the cylinder will not be aligned easily.

Auto Switch Mounting Band Selection

1. The CDA2 series cylinders vary in their bore sizes because of difference in the thickness of their tube walls among different models.
The part number of the auto switch mounting band thus varies depending on the cylinder type.
When an auto switch mounting band is ordered alone, check the cylinder type and refer to the table below.

<Cylinder model>

Standard: CDA2/CDA2W

Auto switch model (Band mounting)	Band part no.				
	Cylinder bore size (mm)				
	40	**50**	**63**	**80**	**100**
D-A3□/A44 D-G39/K39	BDS-04M	BDS-05M	BMB1-063	BMB1-080	BMB1-100
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

⚠ Safety Instructions

These safety instructions are intended to prevent hazardous situations and/or equipment damage. These instructions indicate the level of potential hazard with the labels of **"Caution," "Warning"** or **"Danger."** They are all important notes for safety and must be followed in addition to International Standards (ISO/IEC)*1), and other safety regulations.

⚠ Caution: **Caution** indicates a hazard with a low level of risk which, if not avoided, could result in minor or moderate injury.

⚠ Warning: **Warning** indicates a hazard with a medium level of risk which, if not avoided, could result in death or serious injury.

⚠ Danger : **Danger** indicates a hazard with a high level of risk which, if not avoided, will result in death or serious injury.

*1) ISO 4414: Pneumatic fluid power – General rules relating to systems.
ISO 4413: Hydraulic fluid power – General rules relating to systems.
IEC 60204-1: Safety of machinery – Electrical equipment of machines. (Part 1: General requirements)
ISO 10218-1: Manipulating industrial robots – Safety.
etc.

⚠ Warning

1. **The compatibility of the product is the responsibility of the person who designs the equipment or decides its specifications.**
   Since the product specified here is used under various operating conditions, its compatibility with specific equipment must be decided by the person who designs the equipment or decides its specifications based on necessary analysis and test results. The expected performance and safety assurance of the equipment will be the responsibility of the person who has determined its compatibility with the product. This person should also continuously review all specifications of the product referring to its latest catalog information, with a view to giving due consideration to any possibility of equipment failure when configuring the equipment.
2. **Only personnel with appropriate training should operate machinery and equipment.**
   The product specified here may become unsafe if handled incorrectly. The assembly, operation and maintenance of machines or equipment including our products must be performed by an operator who is appropriately trained and experienced.
3. **Do not service or attempt to remove product and machinery/equipment until safety is confirmed.**
   1. The inspection and maintenance of machinery/equipment should only be performed after measures to prevent falling or runaway of the driven objects have been confirmed.
   2. When the product is to be removed, confirm that the safety measures as mentioned above are implemented and the power from any appropriate source is cut, and read and understand the specific product precautions of all relevant products carefully.
   3. Before machinery/equipment is restarted, take measures to prevent unexpected operation and malfunction.
4. **Contact SMC beforehand and take special consideration of safety measures if the product is to be used in any of the following conditions.**
   1. Conditions and environments outside of the given specifications, or use outdoors or in a place exposed to direct sunlight.
   2. Installation on equipment in conjunction with atomic energy, railways, air navigation, space, shipping, vehicles, military, medical treatment, combustion and recreation, or equipment in contact with food and beverages, emergency stop circuits, clutch and brake circuits in press applications, safety equipment or other applications unsuitable for the standard specifications described in the product catalog.
   3. An application which could have negative effects on people, property, or animals requiring special safety analysis.
   4. Use in an interlock circuit, which requires the provision of double interlock for possible failure by using a mechanical protective function, and periodical checks to confirm proper operation.

⚠ Caution

1. **The product is provided for use in manufacturing industries.**
   The product herein described is basically provided for peaceful use in manufacturing industries.
   If considering using the product in other industries, consult SMC beforehand and exchange specifications or a contract if necessary.
   If anything is unclear, contact your nearest sales branch.

Limited warranty and Disclaimer/ Compliance Requirements

The product used is subject to the following "Limited warranty and Disclaimer" and "Compliance Requirements".
Read and accept them before using the product.

Limited warranty and Disclaimer

1. The warranty period of the product is 1 year in service or 1.5 years after the product is delivered, whichever is first.*2)
   Also, the product may have specified durability, running distance or replacement parts. Please consult your nearest sales branch.
2. For any failure or damage reported within the warranty period which is clearly our responsibility, a replacement product or necessary parts will be provided.
   This limited warranty applies only to our product independently, and not to any other damage incurred due to the failure of the product.
3. Prior to using SMC products, please read and understand the warranty terms and disclaimers noted in the specified catalog for the particular products.

*2) **Vacuum pads are excluded from this 1 year warranty.**
A vacuum pad is a consumable part, so it is warranted for a year after it is delivered.
Also, even within the warranty period, the wear of a product due to the use of the vacuum pad or failure due to the deterioration of rubber material are not covered by the limited warranty.

Compliance Requirements

1. The use of SMC products with production equipment for the manufacture of weapons of mass destruction (WMD) or any other weapon is strictly prohibited.
2. The exports of SMC products or technology from one country to another are governed by the relevant security laws and regulations of the countries involved in the transaction. Prior to the shipment of a SMC product to another country, assure that all local rules governing that export are known and followed.

⚠ Safety Instructions	Be sure to read "Handling Precautions for SMC Products" (M-E03-3) before using.

SMC Corporation
Akihabara UDX 15F,
4-14-1, Sotokanda, Chiyoda-ku, Tokyo 101-0021, JAPAN
Phone: 03-5207-8249 Fax: 03-5298-5362
http://www.smcworld.com

Specifications are subject to change without prior notice and any obligation on the part of the manufacturer.
D-DN
1st printing QV printing QV 8150SZ Printed in Japan.