Smooth Cylinder

Series CA2Y

ø40, ø50, ø63, ø80, ø100

How to Order

CA2Y L 40 – 150 –

With auto switch **CDA2Y L 40 – 150 – M9BW**

With auto switch
(Built-in magnet)

Mounting style

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

Bore size

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

Thread type

Nil	Rc
TN	NPT
TF	G

Cylinder stroke (mm)
Refer to "Standard Stroke" on page 1215.

Auto switch

Nil	Without auto switch

∗ For the 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 page 1215.

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) CDA2YB40-100

Applicable Auto Switches/Refer to pages 1893 to 2007 for further information on auto switches.

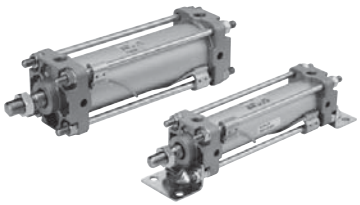
Type	Special function	Electrical entry	Indicator light	Wiring (Output)	Load voltage DC	Load voltage AC	Auto switch model Tie-rod mounting	Auto switch model Band mounting	Lead wire (m) 0.5 (Nil)	1 (M)	3 (L)	5 (Z)	Pre-wired connector	Applicable load	
Solid state auto switch	—	Grommet	Yes	3-wire (NPN)	24 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)	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)		5V,12V		M9NA***	—	○	○	●	○	○	IC circuit	
				3-wire (PNP)				M9PA***	—	○	○	●	○	○		
				2-wire		12V		M9PA***	—	○	○	●	○	○	—	
	With diagnostic output (2-color)			4-wire(NPN)		5 V, 12 V		F59F	G59F	●	—	●	○	○	IC circuit	
	Magnetic field resistant (2-color)			2-wire (Non-polar)		—		P3DW	—	●	—	●	●	○	—	
								P4DW	—	—	—	●	●	○		
Reed auto switch	—	Grommet	Yes	3-wire (Equiv. NPN)	—	5 V	—	A96**	—	●	—	●	—	—	IC circuit	—
			No	2-wire	24 V	12 V	100 V	A93**	—	●	—	●	●	—	—	Relay, PLC
							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	—	—	—	—	—	—	PLC
		DIN terminal					100 V, 200 V	A34C	A34	—	—	—	—	—		
								A44C	A44	—	—	—	—	—		Relay, PLC
	Diagnostic indication (2-color)	Grommet				—	—	A59W	B59W	●	—	●	—	—		

∗∗∗ Water resistant type auto switches can be mounted on the above models, but in such case SMC cannot guarantee water resistance. Consult with SMC regarding water resistant types with the above model numbers.

∗ 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

∗ ○: Manufactured upon receipt of order.
∗∗ D-A9□/A9□V types cannot be mounted on ø50.

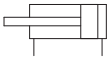
∗ In addition to the models in the above table, there are some other auto switches that are applicable. For more information, refer to page 1228.
∗ Refer to pages 1960 and 1961 for details of auto switches with a pre-wired connector. For D-P3DW□, refer to pages 1948 and 1949.
∗ D-A9□/M9□□□/P3DW auto switches are shipped together (not assembled). (Only auto switch mounting brackets are assembled before shipped for D-A9□ and M9□□□.)



Specifications

Bore size (mm)	40	50	63	80	100
Action	Double acting				
Operating piston speed	5 to 500 mm/s				
Fluid	Air				
Proof pressure	1.05 MPa				
Maximum operating pressure	0.7 MPa				
Ambient and fluid temperature	Without auto switch –10 to 70°C (with no freezing)				
	With auto switch –10 to 60°C (with no freezing)				
Cushion	None				
Lubrication	Not required (Non-lube)				
Mounting	Basic, Axial foot, Front flange, Rear flange, Single clevis, Double clevis Center trunnion				
Allowable leakage rate	0.5 L/min (ANR)				

Symbol
Without cushion



Minimum Operating Pressure

Unit: MPa

Bore size (mm)	40	50	63	80	100
Minimum operating pressure	0.02	0.01			

Standard Stroke

Bore size (mm)	Standard stroke (mm)
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

Note 1) Intermediate strokes not listed above are also available.
Please consult with SMC for strokes outside the above ranges.
Note 2) As the stroke increases, more sliding resistance may result due to the deflection of the piston rod and other factors. Take measures such as the installation of a guide.

Accessory

Mounting		Basic	Foot	Front flange	Rear flange	Single clevis	Double clevis	Center trunnion
Standard	Rod end nut	●	●	●	●	●	●	●
	Clevis pin	—	—	—	—	—	●	—
Option	Single knuckle joint	●	●	●	●	●	●	●
	Double knuckle joint (with pin)	●	●	●	●	●	●	●

Made to Order

Made to Order

(For details, refer to pages 2009 to 2152.)

Symbol	Specifications
-XA□	Change of rod end shape
-XC6	Made of stainless steel
-XC7	Tie-rod, cushion valve and tie-rod nut made of stainless steel
-XC9	Adjustable stroke cylinder/adjustable retraction type
-XC14	Change of trunnion bracket mounting position
-XC15	Change of tie-rod length
-XC27	Double clevis and double knuckle joint pins made of stainless steel
-XC28	Compact flange made of SS400
-XC29	Double knuckle joint with spring pin
-XC30	Rod side trunnion
-XC65	-XC6 + -XC7

Replacement Parts: Seal Kit

Bore size (mm)	Kit no.	Contents
40	CA2Y40-PS	Rod seal 1 pc.
50	CA2Y50-PS	Piston seal 1 pc.
63	CA2Y63-PS	Cylinder tube gasket 2 pcs.
80	CA2Y80-PS	Grease pack (10 g) 1 pc.
100	CA2Y100-PS	

When only grease for maintenance is necessary, please order by the following part numbers.
Grease pack part no.: GR-L-005 (5 g)
GR-L-010 (10 g)
GR-L-150 (150 g)

Weight

(kg)

Bore size (mm)		40	50	63	80	100
Basic weight	Basic style	0.89	1.36	2.00	3.48	4.87
	Axial foot style	1.08	1.58	2.34	4.15	5.86
	Flange style	1.26	1.81	2.79	4.93	6.79
	Single clevis style	1.12	1.70	2.63	4.59	6.65
	Double clevis style	1.16	1.79	2.79	4.88	7.17
	Trunnion style	1.25	1.84	2.80	5.03	7.15
Additional weight per each 50 mm of stroke		0.22	0.28	0.37	0.52	0.65
Accessory	Single knuckle	0.23	0.26	0.26	0.60	0.83
	Double knuckle (With pin)	0.37	0.43	0.43	0.87	1.27

Calculation: (Example) **CA2YL40-100**/Axial foot
- Basic weight·····1.08 kg
- Additional weight·····0.22/50 stroke
- Cylinder stroke·····100 stroke

1.08 + 0.22 x 100/50 = 1.52 kg

Low Friction Cylinder Mounting (Accessory)

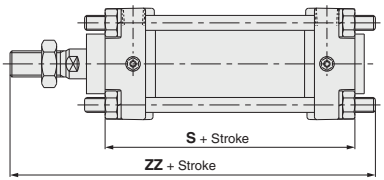
CDA2Y [Mounting style] [Bore size] – [Stroke] – **X1854**

Same mounting specification as CDA2Q

In order to adjust the mounting dimensions of the low friction cylinder (CDA2Q), extend the longitudinal dimension (S, ZZ) by 10 mm.

∗ Cylinders without a built-in magnet can be interchangeable.

Dimensions

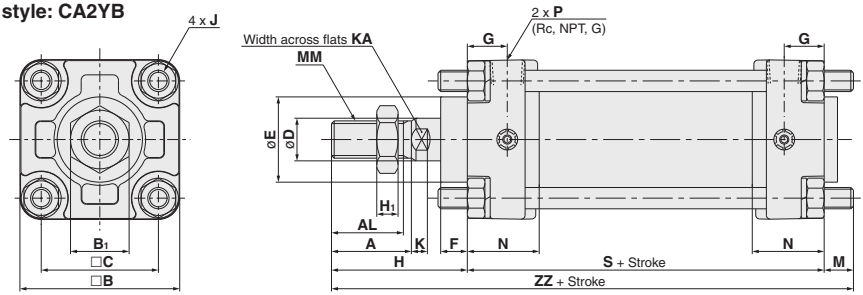


Bore size (mm)	S	ZZ
40	94	156
50	100	169
63	108	180
80	126	214
100	136	225

∗ Add 10 mm to S and ZZ dimensions of the double acting, single rod type on pages 1217 to 1221 for the dimensions for each mounting bracket other than the basic style.

Dimensions: ø40 to ø100

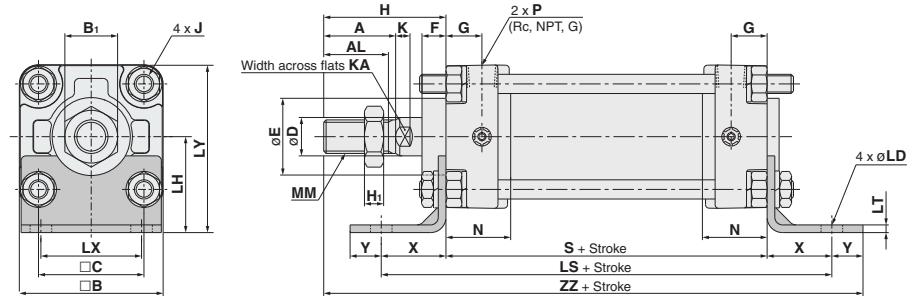
Basic style: CA2YB



(mm)

Bore size (mm)	Stroke range	A	AL	□B	B1	□C	D	E	F	G	H	H1	J	K	KA	M	MM	N	P	S	ZZ
40	Up to 500	30	27	60	22	44	16	32	10	15	51	8	M8 x 1.25	6	14	11	M14 x 1.5	27	1/4	84	146
50	Up to 600	35	32	70	27	52	20	40	10	17	58	11	M8 x 1.25	7	18	11	M18 x 1.5	30	3/8	90	159
63	Up to 600	35	32	85	27	64	20	40	10	17	58	11	M10 x 1.25	7	18	14	M18 x 1.5	31	3/8	98	170
80	Up to 700	40	37	102	32	78	25	52	14	21	71	13	M12 x 1.75	10	22	17	M22 x 1.5	37	1/2	116	204
100	Up to 700	40	37	116	41	92	30	52	14	21	72	16	M12 x 1.75	10	26	17	M26 x 1.5	40	1/2	126	215

Axial foot: CA2YL

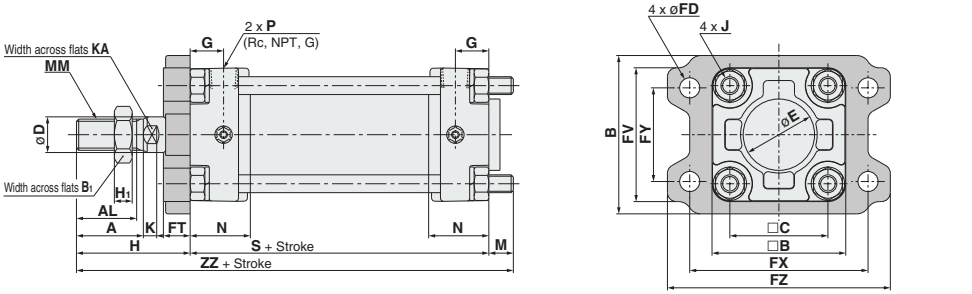


(mm)

Bore size (mm)	A	AL	B	B1	C	D	E	F	G	H1	J	K	KA	LD	LH	LS	LT	LX	LY
40	30	27	60	22	44	16	32	10	15	8	M8 x 1.25	6	14	9.0	40	138	3.2	42	70
50	35	32	70	27	52	20	40	10	17	11	M8 x 1.25	7	18	9.0	45	144	3.2	50	80
63	35	32	85	27	64	20	40	10	17	11	M10 x 1.25	7	18	11.5	50	166	3.2	59	93
80	40	37	102	32	78	25	52	14	21	13	M12 x 1.75	10	22	13.5	65	204	4.5	76	116
100	40	37	116	41	92	30	52	14	21	16	M12 x 1.75	10	26	13.5	75	212	6.0	92	133

Bore size (mm)	MM	N	P	S	X	Y	H	ZZ
40	M14 x 1.5	27	1/4	84	27	13	51	175
50	M18 x 1.5	30	3/8	90	27	13	58	188
63	M18 x 1.5	31	3/8	98	34	16	58	206
80	M22 x 1.5	37	1/2	116	44	16	71	247
100	M26 x 1.5	40	1/2	126	43	17	72	258

Rod Side Flange Style: CA2YF

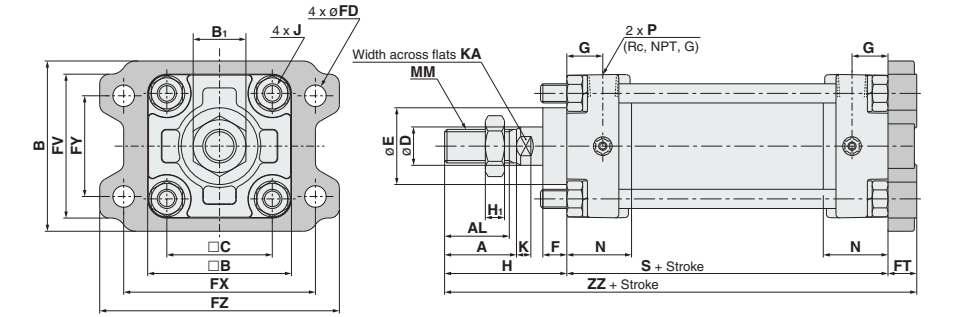


(mm)

Bore size (mm)	A	AL	FB	B	B_1	C	D	E	FV	FD	FT	FX	FY	FZ	G	H_1	J	K	KA	M	MM
40	30	27	71	60	22	44	16	32	60	9.0	12	80	42	100	15	8	M8 x 1.25	6	14	11	M14 x 1.5
50	35	32	81	70	27	52	20	40	70	9.0	12	90	50	110	17	11	M8 x 1.25	7	18	11	M18 x 1.5
63	35	32	101	85	27	64	20	40	86	11.5	15	105	59	130	17	11	M10 x 1.25	7	18	14	M18 x 1.5
80	40	37	119	102	32	78	25	52	102	13.5	18	130	76	160	21	13	M12 x 1.75	10	22	17	M22 x 1.5
100	40	37	133	116	41	92	30	52	116	13.5	18	150	92	180	21	16	M12 x 1.75	10	26	17	M26 x 1.5

Bore size (mm)	N	P	S	H	ZZ
40	27	1/4	84	51	146
50	30	3/8	90	58	159
63	31	3/8	98	58	170
80	37	1/2	116	71	204
100	40	1/2	126	72	215

Head Side Flange Style: CA2YG

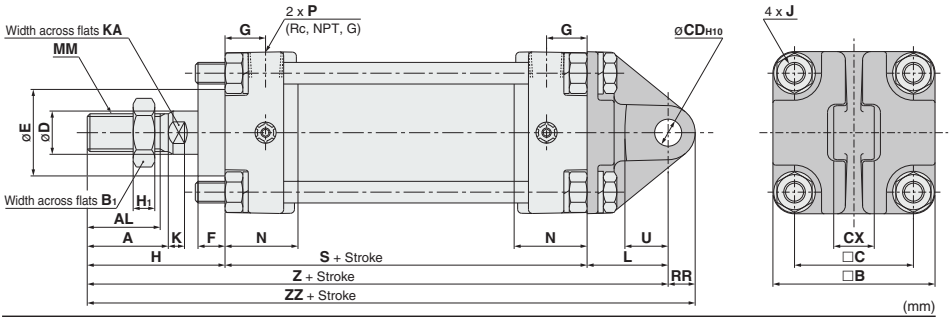


(mm)

Bore size (mm)	A	AL	FB	B	B_1	C	D	E	F	FV	FD	FT	FX	FY	FZ	G	H_1	J	K	KA
40	30	27	71	60	22	44	16	32	10	60	9.0	12	80	42	100	15	8	M8 x 1.25	6	14
50	35	32	81	70	27	52	20	40	10	70	9.0	12	90	50	110	17	11	M8 x 1.25	7	18
63	35	32	101	85	27	64	20	40	10	86	11.5	15	105	59	130	17	11	M10 x 1.25	7	18
80	40	37	119	102	32	78	25	52	14	102	13.5	18	130	76	160	21	13	M12 x 1.75	10	22
100	40	37	133	116	41	92	30	52	14	116	13.5	18	150	92	180	21	16	M12 x 1.75	10	26

Bore size (mm)	MM	N	P	S	H	ZZ
40	M14 x 1.5	27	1/4	84	51	147
50	M18 x 1.5	30	3/8	90	58	160
63	M18 x 1.5	31	3/8	98	58	171
80	M22 x 1.5	37	1/2	116	71	205
100	M26 x 1.5	40	1/2	126	72	216

Single Clevis Style: CA2YC

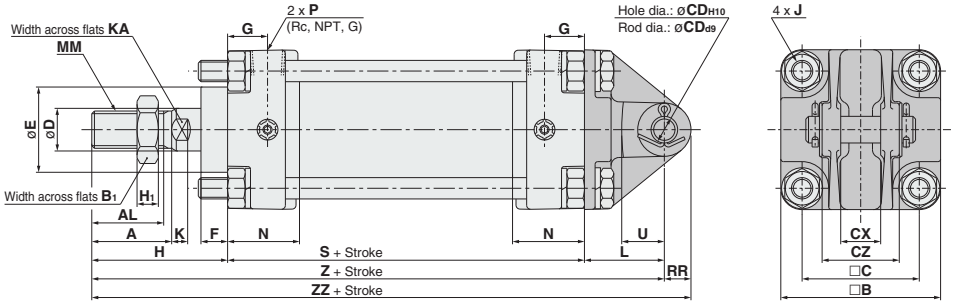


(mm)

Bore size (mm)	A	AL	B	B_1	C	CD^{H10}	CX	D	E	F	G	H_1	J	K	KA	L	MM
40	30	27	60	22	44	$10^{+0.058}_{0}$	$15.0^{-0.1}_{-0.3}$	16	32	10	15	8	M8 x 1.25	6	14	30	M14 x 1.5
50	35	32	70	27	52	$12^{+0.070}_{0}$	$18.0^{-0.1}_{-0.3}$	20	40	10	17	11	M8 x 1.25	7	18	35	M18 x 1.5
63	35	32	85	27	64	$16^{+0.070}_{0}$	$25.0^{-0.1}_{-0.3}$	20	40	10	17	11	M10 x 1.25	7	18	40	M18 x 1.5
80	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	M22 x 1.5
100	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	M26 x 1.5

Bore size (mm)	N	P	RR	S	U	H	Z	ZZ
40	27	1/4	10	84	16	51	165	175
50	30	3/8	12	90	19	58	183	195
63	31	3/8	16	98	23	58	196	212
80	37	1/2	20	116	28	71	235	255
100	40	1/2	25	126	36	72	256	281

Double Clevis Style: CA2YD



∗ Double clevis pins, double knuckle pins and retaining rings are shipped together.

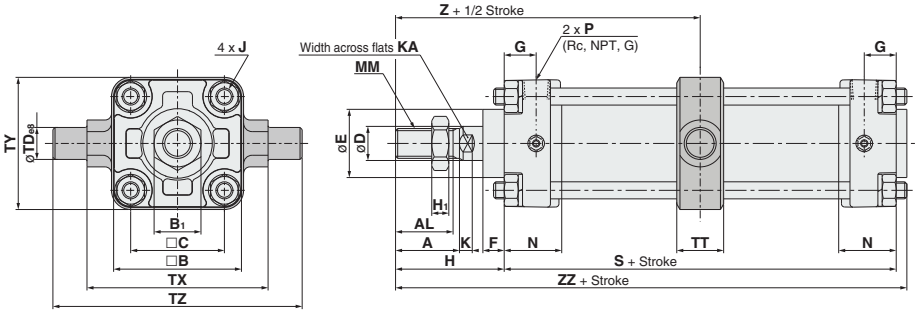
(mm)

Bore size (mm)	A	AL	B	B_1	C	CD	CX	CZ	D	E	F	G	H_1	J	K	KA	L	MM
40	30	27	60	22	44	$10^{+0.058}_{0}$	$15.0^{+0.3}_{+0.1}$	29.5	16	32	10	15	8	M8 x 1.25	6	14	30	M14 x 1.5
50	35	32	70	27	52	$12^{+0.070}_{0}$	$18.0^{+0.3}_{+0.1}$	38	20	40	10	17	11	M8 x 1.25	7	18	35	M18 x 1.5
63	35	32	85	27	64	$16^{+0.070}_{0}$	$25.0^{+0.3}_{+0.1}$	49	20	40	10	17	11	M10 x 1.25	7	18	40	M18 x 1.5
80	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	M22 x 1.5
100	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	M26 x 1.5

Bore size (mm)	N	P	RR	S	U	H	Z	ZZ
40	27	1/4	10	84	16	51	165	175
50	30	3/8	12	90	19	58	183	195
63	31	3/8	16	98	23	58	196	212
80	37	1/2	20	116	28	71	235	255
100	40	1/2	25	126	36	72	256	281

∗ Clevis pins, flat washers and cotter pins are included.

Center Trunnion Style: CA2YT



(mm)

Bore size (mm)	A	AL	B	B_1	C	D	E	F	G	H_1	J	K	KA	MM	N	P	S	TDe8
40	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	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	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	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	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)	TT	TX	TY	TZ	H	Z	ZZ
40	22	85	62	117	51	93	140
50	22	95	74	127	58	103	154
63	28	110	90	148	58	107	162
80	34	140	110	192	71	129	194
100	40	162	130	214	72	135	206

∗ Do not disassemble the trunnion style. It is extremely difficult to align the axial center of the trunnion with the axial center of the cylinder. Thus, if this style of cylinder is disassembled and reassembled, it is likely that the required dimensional accuracy cannot be attained, which may cause malfunction.

Trunnion and Double Clevis Mounting Bracket

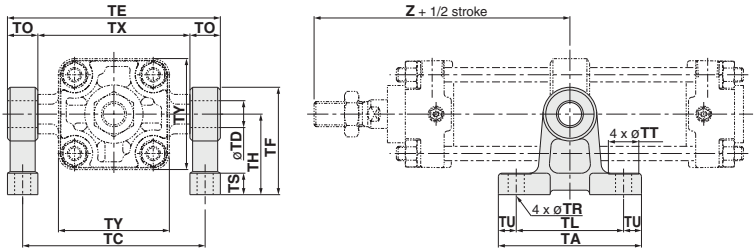
• Strength is the same as cylinder brackets.

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

Note) 1. The above brackets cannot be specified in the part number of the cylinder.
2. They must be ordered separately from the cylinder.
3. When the trunnion brackets are specified, two pieces should be ordered for each cylinder.

Trunnion bracket
Material: Cast iron

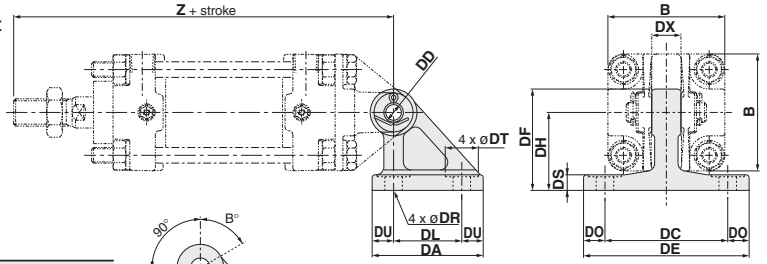
∗ This assembly drawing is provided as a reference. The trunnion bracket must be ordered separately.



(mm)

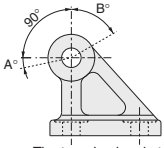
Part no.	Bore size (mm)	TA	TL	TU	TC	TX	TE	TO	TR	TT	TS	TH	TF	TY	Z	TD-H10 (Hole)
CA2-S04	40	80	60	10	102	85	119	17	9	17	12	45	60	62	93	$15^{+0.070}_{0}$
	50	80	60	10	112	95	129	17	9	17	12	45	60	74	103	$15^{+0.070}_{0}$
CA2-S06	63	100	70	15	130	110	150	20	11	22	14	55	73	90	107	$18^{+0.070}_{0}$
MB-S10	80	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 bracket
Material: Cast iron



Rotation

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

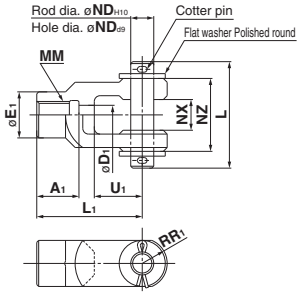


Note) This assembly drawing is provided as a reference. The trunnion bracket must be ordered separately. (mm)

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	$25^{+0.084}_{0}$

Accessory Dimensions

Y Type Double Knuckle Joint

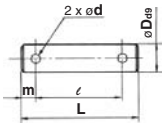


Material: Cast iron (mm)

Part no.	Applicable bore size (mm)	A1	E1	D1	L1	MM	RR1	U1	ND	NX	NZ	L	Cotter 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

∗ Knuckle pin, cotter pin and flat washer are included.

Clevis Pin/Knuckle Pin

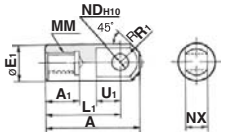


Material: Carbon steel (mm)

Part no.	Applicable bore size (mm)		Dd9	L	ℓ	m	d drill through	Applicable cotter pin	Applicable 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

∗ Cotter pin and flat washer are included.

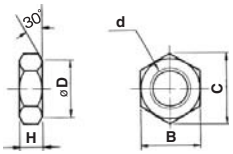
I Type Single Knuckle Joint



Material: Free cutting sulfur steel (mm)

Part no.	Applicable bore size (mm)	A	A1	E1	L1	MM	R1	U1	NDH10	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 option)



Material: Rolled steel (mm)

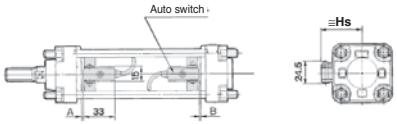
Part no.	Applicable bore size (mm)	d	H	B	C	D
NT-04	**40**	M14 x 1.5	8	22	25.4	21
NT-05	**50, 63**	M18 x 1.5	11	27	31.2	26
NT-08	**80**	M22 x 1.5	13	32	37.0	31
NT-10	**100**	M26 x 1.5	16	41	47.3	39

Auto Switch Mounting 1

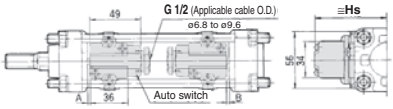
Auto Switch Proper Mounting Position (Detection at Stroke End) and Its Mounting Height

<Band mount type>

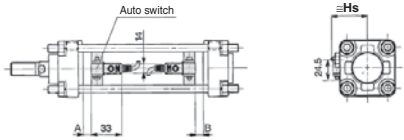
D-B5□/B64/B59W



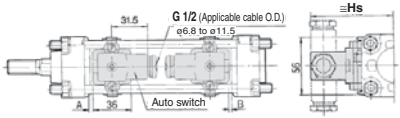
D-A3□
D-G39/K39



D-G5□/K59
D-G5□W/K59W
D-G59F/G5NT

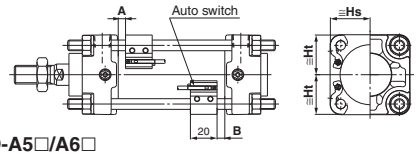


D-A44

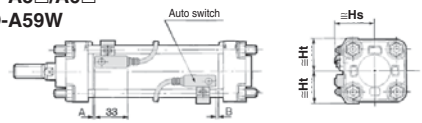


<Tie-rod mount type>

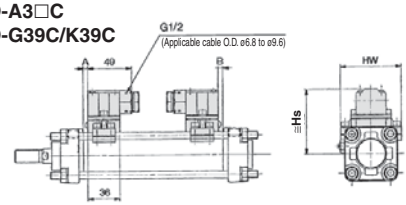
D-A9□/A9□V
D-M9□/M9□V
D-M9□W/M9□WV
D-M9□A/M9□AV
D-Z7□/Z80
D-Y59□/Y69□/Y7P/Y7PV
D-Y7□W/Y7□WV



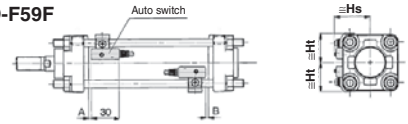
D-A5□/A6□
D-A59W



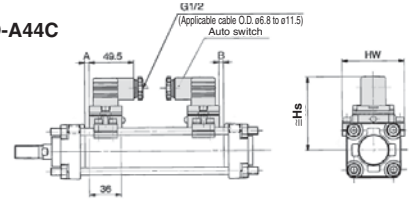
D-A3□C
D-G39C/K39C



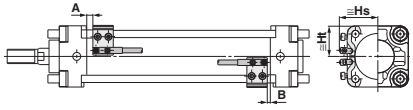
D-F5□/J5□
D-F5NT
D-F5□W/J59W
D-F59F



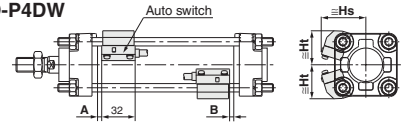
D-A44C



D-P3DW



D-P4DW



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	Note 2) D-A9□ D-A9□V		D-M9□ D-M9□V D-M9□W D-M9□WV D-M9□A D-M9□AV		D-B59W D-Z7□ D-Z80 D-Y59□ D-Y69□ D-Y7P D-Y7PV D-Y7□W D-Y7□WV		D-P3DW		D-P4DW		D-A5□ D-A6□ D-A3□ D-A3□C D-A44 D-A44C D-G39 D-G39C D-K39 D-K39C		D-B5□ D-B64		D-F5□ D-J5□ D-F59F D-F5□W D-J59W		D-G5□ D-K59 D-G5NT D-G5□W D-K59W D-G59F		D-A59W		D-F5NT	
	A	B	A	B	A	B	A	B	A	B	A	B	A	B	A	B	A	B	A	B	A	B	A	B
40	6	4	10	8	3.5	1.5	6	3	3	1	0	0	0.5	0	6.5	4.5	2	0	4	2	11.5	9.5		
50	—	—	10	8	3.5	1.5	5.5	3.5	3	1	0	0	0.5	0	6.5	4.5	2	0	4	2	11.5	9.5		
63	8.5	7.5	12.5	11.5	6	5	3	1.5	5.5	4	2.5	1.5	3	2	9	8	4.5	3.5	6.5	5.5	14	13		
80	12	10	16	14	9.5	7.5	6	4.5	9	7	6	4	6.5	4.5	4.5	12.5	8	6	10	8	17.5	15.5		
100	13.5	12.5	17.5	16.5	11	10	8	6.5	10.5	9	7.5	6.5	8	7	14	13	9.5	8.5	11.5	10.5	19	18		

Note 1) Adjust the auto switch after confirming the operating conditions in the actual setting.

Auto Switch Mounting Height

(mm)

Auto switch model / Bore size	Note 2) D-A9□ D-M9□ D-M9□W D-M9□A		Note 2) D-A9□V		D-M9□V D-M9□WV D-M9□AV		D-Z7□ D-Z80 D-Y59□ D-Y7P 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-G5NT D-G5□W D-K59W 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-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	Hw	Hs	Hw
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	—	—	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

Note 2) D-A9□/A9□V types cannot be mounted on ø50.

Minimum Auto Switch Mounting Stroke

(mm)

Auto switch model	Number of auto switch		Brackets other than center trunnion	Center trunnion				
				ø40	ø50	ø63	ø80	ø100
D-A9□	2 (Different surfaces and same surface) With 1		15	75	—	80	85	90
	n		$15 + 40\frac{(n-2)}{2}$ (n = 2, 4, 6, 8···) Note 1)	$75 + 40\frac{(n-4)}{2}$ (n = 4, 8, 12, 16···) Note 2)		$80 + 40\frac{(n-4)}{2}$ (n = 4, 8, 12, 16···) Note 2)	$85 + 40\frac{(n-4)}{2}$ (n = 4, 8, 12, 16···) Note 2)	$90 + 40\frac{(n-4)}{2}$ (n = 4, 8, 12, 16···) Note 2)
D-A9□V	2 (Different surfaces and same surface) With 1		10	50	—	55	60	65
	n		$10 + 30\frac{(n-2)}{2}$ (n = 2, 4, 6, 8···) Note 1)	$50 + 30\frac{(n-4)}{2}$ (n = 4, 8, 12, 16···) Note 2)		$55 + 30\frac{(n-4)}{2}$ (n = 4, 8, 12, 16···) Note 2)	$60 + 30\frac{(n-4)}{2}$ (n = 4, 8, 12, 16···) Note 2)	$65 + 30\frac{(n-4)}{2}$ (n = 4, 8, 12, 16···) Note 2)
D-M9□ **D-M9□W** **D-M9□A**	2 (Different surfaces and same surface) With 1		15	80		85	90	95
	n		$15 + 40\frac{(n-2)}{2}$ (n = 2, 4, 6, 8···) Note 1)	$80 + 40\frac{(n-4)}{2}$ (n = 4, 8, 12, 16···) Note 2)		$85 + 40\frac{(n-4)}{2}$ (n = 4, 8, 12, 16···) Note 2)	$90 + 40\frac{(n-4)}{2}$ (n = 4, 8, 12, 16···) Note 2)	$95 + 40\frac{(n-4)}{2}$ (n = 4, 8, 12, 16···) Note 2)
D-M9□V **D-M9□WV** **D-M9□AV**	2 (Different surfaces and same surface) With 1		10	55		60	65	70
	n		$10 + 30\frac{(n-2)}{2}$ (n = 2, 4, 6, 8···) Note 1)	$55 + 30\frac{(n-4)}{2}$ (n = 4, 8, 12, 16···) Note 2)		$60 + 30\frac{(n-4)}{2}$ (n = 4, 8, 12, 16···) Note 2)	$65 + 30\frac{(n-4)}{2}$ (n = 4, 8, 12, 16···) Note 2)	$70 + 30\frac{(n-4)}{2}$ (n = 4, 8, 12, 16···) Note 2)
D-A5□/A6 **D-F5□/J5** **D-F5□W/J59W** **D-F59F**	2 (Different surfaces and same surface) With 1		15	90		100	110	120
	n (Same surface)		$15 + 55\frac{(n-2)}{2}$ (n = 2, 4, 6, 8···) Note 1)	$90 + 55\frac{(n-4)}{2}$ (n = 4, 8, 12, 16···) Note 2)		$100 + 55\frac{(n-4)}{2}$ (n = 4, 8, 12, 16···) Note 2)	$110 + 55\frac{(n-4)}{2}$ (n = 4, 8, 12, 16···) Note 2)	$120 + 55\frac{(n-4)}{2}$ (n = 4, 8, 12, 16···) Note 2)
D-A59W	2 (Different surfaces and same surface)		20	90		100	110	120
	n (Same surface)		$20 + 55\frac{(n-2)}{2}$ (n = 2, 4, 6, 8···) Note 1)	$90 + 55\frac{(n-4)}{2}$ (n = 4, 8, 12, 16···) Note 2)		$100 + 55\frac{(n-4)}{2}$ (n = 4, 8, 12, 16···) Note 2)	$110 + 55\frac{(n-4)}{2}$ (n = 4, 8, 12, 16···) Note 2)	$120 + 55\frac{(n-4)}{2}$ (n = 4, 8, 12, 16···) Note 2)
	1		15	90		100	110	120
D-F5NT	2 (Different surfaces and same surface) With 1		25	110		120	130	140
	n (Same surface)		$25 + 55\frac{(n-2)}{2}$ (n = 2, 4, 6, 8···) Note 1)	$110 + 55\frac{(n-4)}{2}$ (n = 4, 8, 12, 16···) Note 2)		$120 + 55\frac{(n-4)}{2}$ (n = 4, 8, 12, 16···) Note 2)	$130 + 55\frac{(n-4)}{2}$ (n = 4, 8, 12, 16···) Note 2)	$140 + 55\frac{(n-4)}{2}$ (n = 4, 8, 12, 16···) Note 2)
D-B5□/B64 **D-G5□/K59** **D-G5□W** **D-K59W** **D-G59F** **D-G5NT**	With 2	Different surfaces	15	90		100	110	
		Same surface	75					
	With n	Different surfaces	$15 + 50\frac{(n-2)}{2}$ (n = 2, 4, 6, 8, ···) Note 1)	$90 + 50\frac{(n-4)}{2}$ (n = 4, 8, 12, 16, ···) Note 2)		$100 + 50\frac{(n-4)}{2}$ (n = 4, 8, 12, 16, ···) Note 2)	$110 + 50\frac{(n-4)}{2}$ (n = 4, 8, 12, 16···) Note 2)	
		Same surface	75 + 50(n – 2) (n = 2, 3, 4, ···)	90 + 50(n – 2) (n = 2, 4, 6, 8, ···) Note 1)		100 + 50 (n – 2) (n = 2, 4, 6, 8, ···) Note 1)	110 + 50 (n – 2) (n = 2, 4, 6, 8, ···) Note 1)	
	1		10	90		100	110	
D-B59W	With 2	Different surfaces	20	90		100	110	
		Same surface	75					
	With n	Different surfaces	$20 + 50\frac{(n-2)}{2}$ (n = 2, 4, 6, 8, ···) Note 1)	$90 + 50\frac{(n-4)}{2}$ (n = 4, 8, 12, 16, ···) Note 2)		$100 + 50\frac{(n-4)}{2}$ (n = 4, 8, 12, 16, ···) Note 2)	$110 + 50\frac{(n-4)}{2}$ (n = 4, 8, 12, 16, ···) Note 2)	
		Same surface	75 + 50 (n – 2) (n = 2, 3, 4, ···)	90 + 50(n – 2) (n = 2, 4, 6, 8, ···) Note 1)		100 + 50 (n – 2) (n = 2, 4, 6, 8, ···) Note 1)	110 + 50 (n – 2) (n = 2, 4, 6, 8, ···) Note 1)	
	1		15	90		100	110	
D-A3□ **D-G39** **D-K39**	With 2	Different surfaces	35	75		80	90	
		Same surface	100	100		100	100	
	With n	Different surfaces	35 + 30 (n – 2) (n = 2, 3, 4, ···)	75 + 30 (n – 2) (n = 2, 4, 6, 8, ···) Note 1)		80 + 30 (n – 2) (n = 2, 4, 6, 8, ···) Note 1)	90 + 30 (n – 2) (n = 2, 4, 6, 8, ···) Note 1)	
		Same surface	100 + 100 (n – 2) (n = 2, 3, 4, ···)	100 + 100 (n – 2) (n = 2, 4, 6, 8, ···) Note 1)				
	1		10	75		80	90	
D-A44	With 2	Different surfaces	35	75		80	90	
		Same surface	55					
	With n	Different surfaces	35 + 30 (n – 2) (n = 2, 3, 4, ···)	75 + 30 (n – 2) (n = 2, 4, 6, 8, ···) Note 1)		80 + 30 (n – 2) (n = 2, 4, 6, 8, ···) Note 1)	90 + 30 (n – 2) (n = 2, 4, 6, 8, ···) Note 1)	
		Same surface	55 + 50 (n – 2) (n = 2, 3, 4, ···)	75 + 50 (n – 2) (n = 2, 4, 6, 8, ···) Note 1)		80 + 50 (n – 2) (n = 2, 4, 6, 8, ···) Note 1)	90 + 50 (n – 2) (n = 2, 4, 6, 8, ···) Note 1)	
	1		10	75		80	90	

Note 1) When "n" is an odd number, an even number that is one larger than this odd number is used for the calculation.
Note 2) When "n" is an odd number, a multiple of 4 that is larger than this odd number is used for the calculation.

Auto Switch Mounting 3

Minimum Auto Switch Mounting Stroke

(mm)

Auto switch model	Number of auto switch		Brackets other than center trunnion	Center trunnion				
				ø40	ø50	ø63	ø80	ø100
D-A3□C D-G39C D-K59C	With 2	Different surfaces	20	75		80	90	
		Same surface	100	100		100	100	
	With n	Different surfaces	20 + 35 (n – 2) (n = 2, 3, 4, ···)	75 + 35 (n – 2) (n = 2, 4, 6, 8, ···) Note 1)		80 + 35 (n – 2) (n = 2, 4, 6, 8, ···) Note 1)	90 + 35 (n – 2) (n = 2, 4, 6, 8, ···) Note 1)	
		Same surface	100 + 100 (n – 2) (n = 2, 3, 4, 5···)	100 + 100 (n – 2) (n = 2, 4, 6, 8, ···) Note 1)				
	1		10	75		80	90	
D-A44C	With 2	Different surfaces	20	75		80	90	
		Same surface	55					
	With n	Different surfaces	20 + 35 (n – 2) (n = 2, 3, 4, ···)	75 + 35 (n – 2) (n = 2, 4, 6, 8, ···) Note 1)		80 + 35 (n – 2) (n = 2, 4, 6, 8, ···) Note 1)	90 + 35 (n – 2) (n = 2, 4, 6, 8, ···) Note 1)	
		Same surface	55 + 50 (n – 2) (n = 2, 3, 4, ···)	75 + 50 (n – 2) (n = 2, 4, 6, 8, ···) Note 1)		80 + 50 (n – 2) (n = 2, 4, 6, 8, ···) Note 1)	90 + 50 (n – 2) (n = 2, 4, 6, 8, ···) Note 1)	
	1		10	75		80	90	
D-Z7□/Z80 D-Y59□/Y7P D-Y7□W	2 (Different surfaces and same surface) With 1		15	80	85	90	95	105
	n		$15 + 40\frac{(n-2)}{2}$ (n = 2, 4, 6, 8···) Note 1)	$80 + 40\frac{(n-4)}{2}$ (n = 4, 8, 12, 16···) Note 2)	$85 + 40\frac{(n-4)}{2}$ (n = 4, 8, 12, 16···) Note 2)	$90 + 40\frac{(n-4)}{2}$ (n = 4, 8, 12, 16···) Note 2)	$95 + 40\frac{(n-4)}{2}$ (n = 4, 8, 12, 16···) Note 2)	$105 + 40\frac{(n-4)}{2}$ (n = 4, 8, 12, 16···) Note 2)
D-Y69□/Y7PV D-Y7□WV	2 (Different surfaces and same surface) With 1		10	65		75	80	90
	n		$10 + 30\frac{(n-2)}{2}$ (n = 2, 4, 6, 8···) Note 1)	$65 + 30\frac{(n-4)}{2}$ (n = 4, 8, 12, 16···) Note 2)		$75 + 30\frac{(n-4)}{2}$ (n = 4, 8, 12, 16···) Note 2)	$80 + 30\frac{(n-4)}{2}$ (n = 4, 8, 12, 16···) Note 2)	$90 + 30\frac{(n-4)}{2}$ (n = 4, 8, 12, 16···) Note 2)
D-P3DW	2 (Different surfaces and same surface) With 1		15	85				
	n		$15 + 50\frac{(n-2)}{2}$ (n = 2, 4, 6, 8···) Note 1)	$85 + 50\frac{(n-4)}{2}$ (n = 4, 8, 12, 16···) Note 2)				
D-P4DW	2 (Different surfaces and same surface) With 1		15	120		130	140	
	n		$15 + 65\frac{(n-2)}{2}$ (n = 2, 4, 6, 8···) Note 1)	$120 + 65\frac{(n-4)}{2}$ (n = 4, 8, 12, 16···) Note 2)		$130 + 65\frac{(n-4)}{2}$ (n = 4, 8, 12, 16···) Note 2)	$140 + 65\frac{(n-4)}{2}$ (n = 4, 8, 12, 16···) Note 2)	

Note 1) When "n" is an odd number, an even number that is one larger than this odd number is used for the calculation.
Note 2) When "n" is an odd number, a multiple of 4 that is larger than this odd number is used for the calculation.

Operating Range

(mm)

Auto switch model	Bore size				
	40	50	63	80	100
D-A9□/A9□V	7	—	9	9	9
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
D-Y59□/Y69□ D-Y7P/Y7□V D-Y7□W/Y7□WV	8	7	5.5	6.5	6.5

(mm)

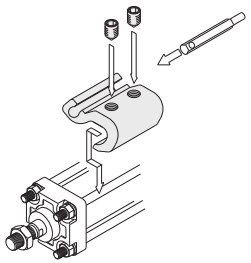
Auto switch model	Bore size				
	40	50	63	80	100
D-F5□/J5□/F5□W D-J59W D-F5NT/F59F	4	4	4.5	4.5	4.5
D-G5□/K59/G5□W D-K59W D-G5NTL/G59F	5	6	6.5	6.5	7
D-G39/K39 D-G39C/K39C	9	9	10	10	11
D-P3DW	4.5	5	6	5.5	6
D-P4DW	4	4	4.5	4	4.5

∗ Since this is a guideline including hysteresis, not meant to be guaranteed. (assuming approximately ±30% dispersion.)
There may be the case it will vary substantially depending on an ambient environment.
Note) D-A9□/A9□V types cannot be mounted on ø50.

Auto Switch Mounting Bracket/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	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



• Mounting example of D-A9□(V)/M9□(V)/M9□W(V)/M9□A(V)

<Band mounting>

Auto switch model	Bore size (mm)				
	40	50	63	80	100
D-A3□/A44 D-G39/K39	BD1-04M	BD1-05M	BD1-06M	BD1-08M	BD1-10M
D-B5□/B64 D-B59W D-G5□/K59 D-G5□W/K59W D-G59F D-G5NT	BA-04	BA-05	BA-06	BA-08	BA-10

∗ Auto switch mounting brackets are included in D-A3□C/A44C/G39C/K39C types. Indicate 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

Other than the applicable auto switches listed in "How to Order", the following auto switches can be mounted.
For detailed specifications, refer to pages 1893 to 2007.

Auto switch type	Model	Electrical entry (Direction)	Features	Applicable bore size
Reed	D-A93V, A96V	Grommet (Perpendicular)	—	ø40, ø63, ø80, ø100
	D-A90V		Without indicator light	
	D-A53, A56, B53, Z73, Z76	Grommet (In-line)	—	ø40 to ø100
	D-A67, Z80		Without indicator light	
Solid state	D-M9NV, M9PV, M9BV	Grommet (Perpendicular)	—	ø40 to ø100
	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 indication)	
	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-F5NTL, G5NT		With timer	
	D-P5DW		Magnetic field resistant (2-color indication)	

∗ With pre-wired connector is available for solid state auto switches. For details, refer to pages 1960 and 1961.
∗ Normally closed (NC = b contact) solid state auto switches (D-F9G/F9H/Y7G/Y7H types) are also available. Refer to pages 1911 and 1913 for details.
∗ Wide range detection type, solid state auto switches (D-G5NB type) are also available. Refer to page 1953 for details.