Air Cylinder

ø20, ø25, ø32, ø40, ø50, ø63

- **Repairable round body cylinder allowing high-speed operation up to 40 in/sec**
- **Available in 6 bore sizes and 8 different mounting styles**
- **Removable rod covers allow for easy seal replacement.**
- **No protrusion from the cylinder diameter with the built-in cushion valve for air cushion**
- **Band-mounted auto switch allows easy position adjustment.**
- **Threaded holes for trunnion style mounting**
- **Mounting brackets are designed to withstand reaction forces from cylinder, ensuring long life.**
- **Mounting dimensions are interchangeable with the existing model.**∗1
  (∗1 Excluding Long stroke models: ø20: More than 8 inches, ø25-63: More than 12 inches)
- **Engineered piston seal resists rolling.**

***NCG* Series**

SMC

CAT.NAS20-313A

Air Cylinder: Standard Type
Double Acting, Single Rod
NCG Series
ø20, ø25, ø32, ø40, ø50, ø63

How to Order

Without auto switch NCG **L** **N** **25** – **04** **00** **Z1**

With auto switch NCDG **L** **N** **25** – **04** **00** **Z1** – **M9NW** ☐

Built-in magnet

Mounting style

Z	Basic
C	Single clevis
L	Axial foot
F	Front flange
G	Rear flange

U	Front trunnion
T	Rear trunnion
D	Double clevis

Cushion

N	Rubber bumper
A	Air cushion

Bore size

20	20 mm (3/4")	**40**	40 mm (1-1/2")
25	25 mm (1")	**50**	50 mm (2")
32	32 mm (1-1/4")	**63**	63 mm (2-1/2")

Cylinder stroke [inch]

Stroke
Hundredths of an inch∗2

∗2 Stroke length must be indicated as 4 digits.
First and second digit: Stroke/Inch
Third and fourth digit: Stroke/Hundredth of an inch
Example) 0525 = 5.25 (5-1/4) inch stroke

Auto switch

Nil	Without auto switch (Built-in magnet)

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

Number of auto switches

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

Applicable Auto Switches / Refer to the **Web Catalog** for further information on auto switches.

Type	Special function	Electrical entry	Indicator light	Wiring (Output)	Load voltage			Auto switch model / Applicable bore size		Lead wire length [m]				Pre-wired connector	Applicable load	
					DC		AC	ø20 to ø63		0.5 (Nil)	1 (M)	3 (L)	5 (Z)			
								Perpendicular	In-line							
Solid state auto switch	——	Grommet	Yes	3-wire (NPN)	24 V	5 V, 12 V	—	**M9NV**	**M9N**	●	●	●	○	○	IC circuit	Relay, PLC
				3-wire (PNP)				**M9PV**	**M9P**	●	●	●	○	○		
				2-wire		12 V		**M9BV**	**M9B**	●	●	●	○	○	—	
	Diagnostic indication (2-color indicator)	Grommet		3-wire (NPN)		5 V, 12 V		**M9NWV**	**M9NW**	●	●	●	○	○	IC circuit	
				3-wire (PNP)				**M9PWV**	**M9PW**	●	●	●	○	○		
				2-wire		12 V		**M9BWV**	**M9BW**	●	●	●	○	○	—	
	Water resistant (2-color indicator)			3-wire (NPN)		5 V, 12 V		**M9NAV**∗1	**M9NA**∗1	○	○	●	○	○	IC circuit	
				3-wire (PNP)				**M9PAV**∗1	**M9PA**∗1	○	○	●	○	○		
				2-wire		12 V		**M9BAV**∗1	**M9BA**∗1	○	○	●	○	○	—	
Reed auto switch	——	Grommet	Yes	3-wire (Equiv. to NPN)	—	5 V	—	**A96V**	**A96**	●	—	●	—	—	IC circuit	—
			No	2-wire	24 V	12 V	100 V	**A93V**∗2	**A93**	●	●	●	●	—	—	Relay, PLC
							100 V or less	**A90V**	**A90**	●	—	●	—	—	IC circuit	

∗1 Water-resistant type auto switches can be mounted on the above models, but SMC cannot guarantee water resistance.
A water-resistant type cylinder is recommended for use in an environment which requires water resistance.
∗2 The 1 m lead wire is only applicable to the D-A93.
∗ 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 a "○" are produced upon receipt of order.

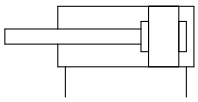
∗ There are applicable auto switches other than those listed above. For details ⇒ p. 18
∗ For details on auto switches with pre-wired connectors ⇒ Refer to the **Web Catalog**.
∗ The D-A9□□/M9□□□ auto switches are shipped together with the product but do not come assembled. (Only the auto switch mounting brackets are assembled before shipment.)

Specifications

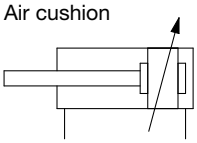
Bore size [mm]	20	25	32	40	50	63
Action	Double acting, Single rod					
Type	Non-lube					
Fluid	Air					
Proof pressure	215 psi (1.5 MPa)					
Maximum operating pressure	145 psi (1.0 MPa)					
Minimum operating pressure	8 psi (0.05 MPa)					
Ambient and fluid temperature	Without auto switch: 14 to 158°F [–10 to 70°C] (No freezing) With auto switch: 14 to 140°F [–10 to 60°C] (No freezing)					
Piston speed	2 to 40 inch/sec (50 to 1000 mm/s)					
Stroke length tolerance	Up to 39 st $^{+0.055}_{0}$ inch, Up to 59 st $^{+0.070}_{0}$ inch					
Cushion	Rubber bumper, Air cushion					
Mounting	Basic, Axial foot, Rod flange, Head flange, Rod trunnion, Head trunnion, Clevis					

Symbol

Rubber bumper



Air cushion



Allowable Kinetic Energy

Bore size [mm]			20	25	32	40	50	63
Allowable kinetic energy [J]	**Rubber bumper**	**Male rod end**	0.28	0.41	0.66	1.20	2.00	3.40
		Female rod end	0.11	0.18	0.29	0.52	0.91	1.54
	Air cushion	**Male rod end**	R: 0.35 H: 0.42	R: 0.56 H: 0.65	0.91	1.80	3.40	4.90
		Female rod end	0.11	0.18	0.29	0.52	0.91	1.54

Standard Strokes (for NCG)

Bore size [mm]	Standard stroke*1 [inch]	Maximum manufacturable stroke [inch]
20	0.05 to 8	0.05 to 59
25	0.05 to 12	
32		
40		
50		
63		

*1 Other intermediate strokes can be manufactured upon receipt of an order. Spaces are not used for the intermediate strokes.

* Long stroke applies to the axial foot style and the rod side flange styles. If other length exceeds the stroke limit, the stroke should be determined based on the stroke selection table in the technical data.

Rod Boot Material

Symbol	Rod boot material	Maximum operating temperature
J	Nylon tarpaulin	70°C
K	Heat resistant tarpaulin	110°C*1

*1 Maximum ambient temperature for the rod boot itself.

NCG Mounting Bracket Part Nos.

Mounting bracket	Cylinder nominal size inch (Bore size mm)						Contents
	3/4" (20)	1" (25)	1-1/4" (32)	1-1/2" (40)	2" (50)	2-1/2" (63)	
Foot	NCG-L020	NCG-L025	NCG-L032	NCG-L040	NCG-L050	NCG-L063	2 foot brackets, 8 mounting bolts
Flange	NCG-F020	NCG-F025	NCG-F032	NCG-F040	NCG-F050	NCG-F063	1 flange, 4 mounting bolts
Trunnion	NCG-T020	NCG-T025	NCG-T032	NCG-T040	NCG-T050	NCG-T063	2 trunnion pins, 2 trunnion bolts, 2 flat washers
Trunnion bracket	NCG-P020	NCG-P025	NCG-P032	NCG-P040	NCG-P050	NCG-P063	1 trunnion bracket
Double clevis	NCG-D020	NCG-D025	NCG-D032	NCG-D040	NCG-D050	NCG-D063	1 clevis, 4 mounting bolts, 1 clevis pin, 2 retaining rings
Single clevis	NCG-C020	NCG-C025	NCG-C032	NCG-C040	NCG-C050	NCG-C063	1 bimba clevis, 4 mounting bolts

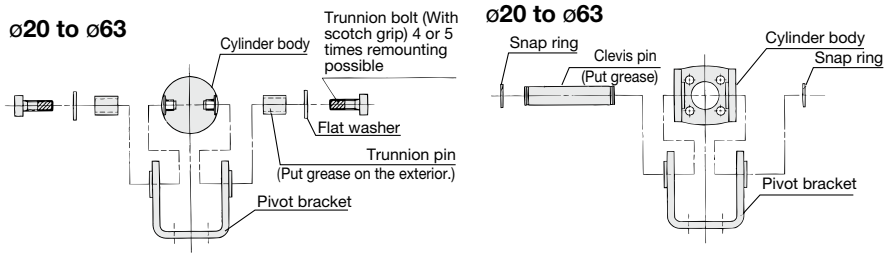
Mounting Procedure

Mounting procedure for trunnion

Follow the procedures below when mounting a pivot bracket on the trunnion.

Mounting procedure for clevis

Follow the procedures below when mounting a pivot bracket on the clevis style.



Weights

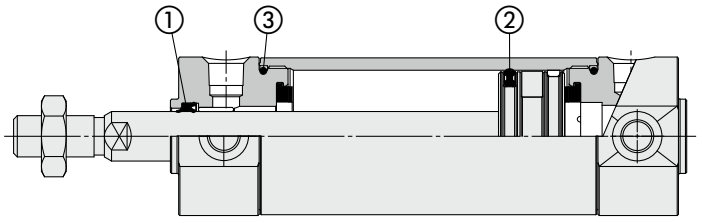
[lbs]

Bore size		20	25	32	40	50	63
Basic weight	Basic	0.22	0.35	0.55	0.86	1.63	2.29
	Foot	0.46	0.64	0.90	1.34	2.92	4.34
	Flange	0.40	0.57	0.86	1.30	2.38	3.39
	Trunnion	0.24	0.40	0.62	0.97	1.94	2.60
	Single clevis	0.25	0.40	0.67	0.98	1.90	2.62
	Double clevis	0.33	0.53	0.88	1.36	2.51	3.78
Additional weight for Trunnion bracket		0.18	0.20	0.37	0.50	0.97	1.76
Additional weight for Single clevis		0.12	0.12	0.12	0.32	0.45	0.51
Additional weight per 1" of stroke		0.05	0.08	0.10	0.16	0.24	0.29
Additional weight for Air cushion type		0.02	0.02	0.04	0.04	0.07	0.07

How to calculate/Ex) NCGLA20-0400Z1

Foot type, Bore 20 (3/4"), Stroke 4 inch, Air cushion
Basic weight (Foot type)…0.46
Additional weight…0.05
Cylinder stroke…4 inch
Air cushion…0.02
Calculate = 0.46 + 0.05 x 4 + 0.02 = 0.68 (lbs)

Construction



Component Parts

No.	Description	Material
1	**Rod seal**	NBR
2	**Piston seal**	NBR
3	**Tube gasket**	NBR

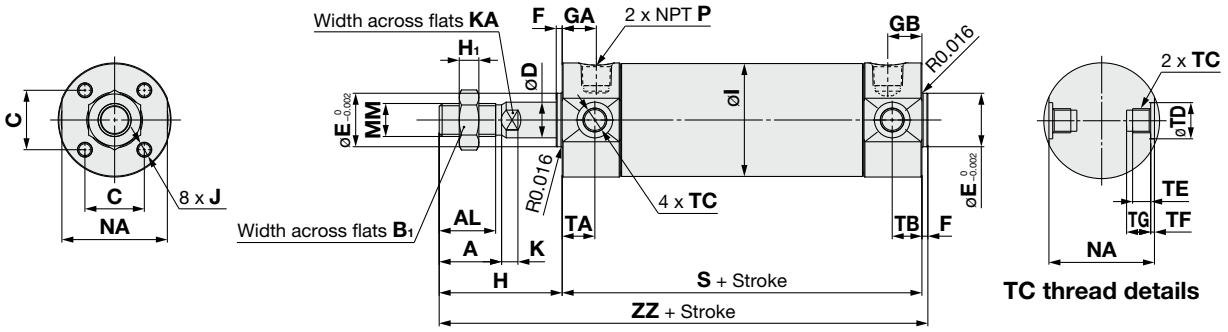
Replacement Parts: Seal Kit (Common for NCGN, NCGA)

Bore Size [mm]	Seal kit no.	Bore Size [mm]	Seal kit no.
20	CG1N20Z-PS	**40**	CG1N40Z-PS
25	CG1N25Z-PS	**50**	—
32	CG1N32Z-PS	**63**	—

* As sizes ø50 and larger cannot be disassembled, the seal cannot be replaced.
* For disassembly/replacement ⇨ Refer to the Specific Product Precautions on page 21. Order with the kit number according to the bore size.
* The seal kit includes a grease pack (10 g). Order with the following part number when only the grease pack is needed.
  Grease pack part number: GR-S-010 (10 g)

Basic Style with Rubber Bumper: NCGZN

NCGZN



TA/TB Sectional View

[Inch]

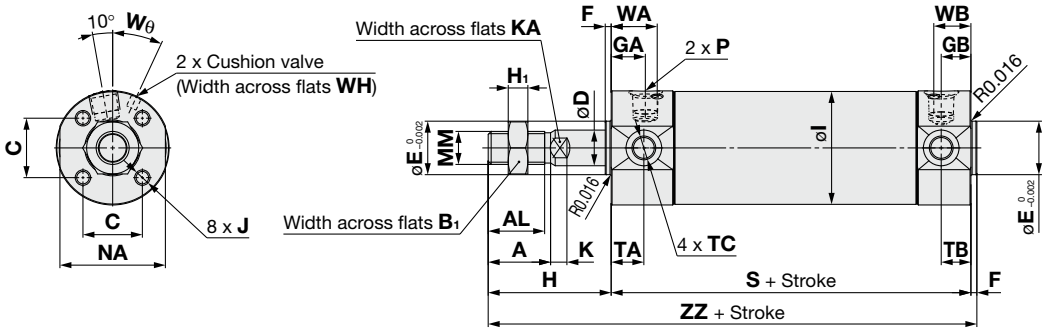
Bore size [mm]	TC	TD_{H9}	TE	TF	TG
20	M5 x 0.8	$0.315^{+0.003}_{-0}$	0.16	0.02	0.22
25	M6 x 0.75	$0.394^{+0.003}_{-0}$	0.20	0.04	0.26
32	M8 x 1.0	$0.472^{+0.003}_{-0}$	0.22	0.04	0.30
40	M10 x 1.25	$0.551^{+0.003}_{-0}$	0.24	0.05	0.33
50	M12 x 1.25	$0.630^{+0.003}_{-0}$	0.30	0.08	0.39
63	M14 x 1.5	$0.709^{+0.003}_{-0}$	0.45	0.12	0.57

[inch]

Bore size [mm]	Stroke range [inch]	A	AL	B_1	C	D	E	F	GA	GB	H	H_1	I	J	K	KA	MM	NA	P	S	TA	TB	ZZ
20	Up to 59	0.55	0.50	0.44	0.55	0.315	0.472	0.08	0.45	0.45	1.00	0.16	1.02	#8-32UNC depth 0.28	0.16	0.24	1/4-28UNF	0.94	1/8	2.72	0.43	0.43	3.80
25		0.55	0.50	0.50	0.65	0.394	0.551	0.08	0.45	0.45	1.12	0.19	1.22	#10-32UNF depth 0.30	0.20	0.31	5/16-24UNF	1.14	1/8	2.72	0.43	0.43	3.92
32		0.83	0.75	0.69	0.79	0.472	0.709	0.08	0.45	0.45	1.63	0.26	1.50	#10-32UNF depth 0.30	0.22	0.39	7/16-20UNF	1.40	1/8	2.80	0.43	0.39	4.51
40		0.75	—	0.69	1.02	0.630	0.984	0.08	0.51	0.51	1.63	0.26	1.85	1/4-28UNF depth 0.47	0.30	0.55	7/16-20UNF	1.73	1/8	3.07	0.47	0.39	4.78
50		0.88	—	0.75	1.26	0.787	1.181	0.08	0.55	0.55	2.07	0.32	2.28	5/16-24UNF depth 0.63	0.30	0.71	1/2-20UNF	2.17	1/4	3.54	0.51	0.47	5.69
63		0.88	—	0.75	1.50	0.787	1.260	0.08	0.55	0.55	2.07	0.32	2.83	3/8-24UNF depth 0.63	0.30	0.71	1/2-20UNF	2.72	1/4	3.54	0.51	0.47	5.69

Basic Style with Air Cushion: NCGZA

NCGZA

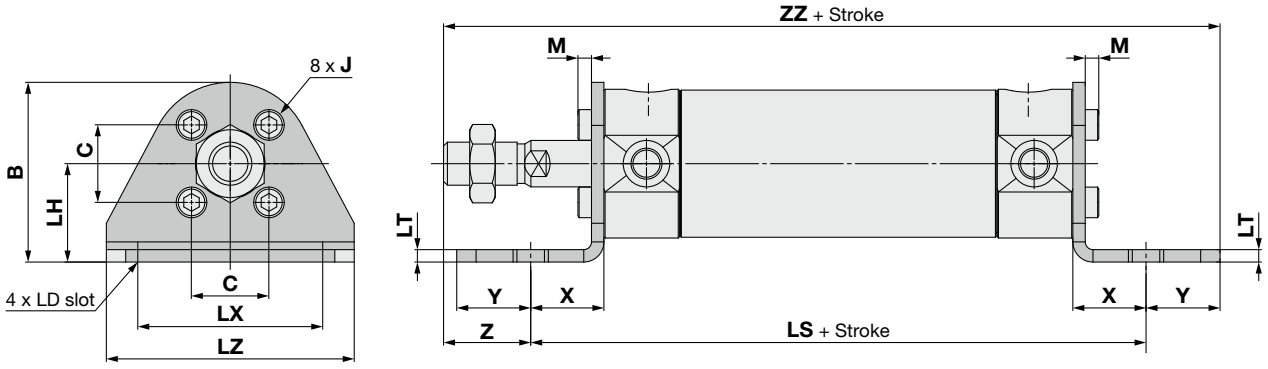


[inch]

Bore size [mm]	Stroke range [inch]	A	AL	B_1	C	D	E	F	GA	GB	H	H_1	I	J	K	KA	MM	NA	P	S	TA	TB	TC	WA	WB	WH	Wθ	ZZ
20	Up to 59	0.55	0.50	0.44	0.55	0.315	0.472	0.08	0.45	0.33	1.00	0.16	1.02	#8-32UNC DEPTH 0.28	0.16	0.24	1/4-28UNF	0.94	#10-32UNF	2.72	0.43	0.43	M5 x 0.8	0.63	0.47	0.059	25°	3.80
25		0.55	0.50	0.50	0.65	0.394	0.551	0.08	0.47	0.39	1.12	0.19	1.22	#10-32UNF DEPTH 0.30	0.20	0.31	5/16-24UNF	1.14	#10-32UNF	2.72	0.43	0.43	M6 x 0.75	0.53	0.53	0.059	25°	3.92
32		0.83	0.75	0.69	0.79	0.472	0.709	0.08	0.45	0.39	1.63	0.26	1.50	#10-32UNF DEPTH 0.30	0.22	0.39	7/16-20UNF	1.40	NPT1/8	2.80	0.43	0.39	M8 x 1	0.61	0.49	0.059	25°	4.51
40		0.75	—	0.69	1.02	0.630	0.984	0.08	0.51	0.39	1.63	0.26	1.85	1/4-28UNF DEPTH 0.47	0.30	0.55	7/16-20UNF	1.73	NPT1/8	3.07	0.47	0.39	M10 x 1.25	0.71	0.55	0.059	20°	4.78
50		0.88	—	0.75	1.26	0.787	1.181	0.08	0.55	0.47	2.07	0.32	2.28	5/16-24UNF DEPTH 0.63	0.30	0.71	1/2-20UNF	2.17	NPT1/4	3.54	0.51	0.47	M12 x 1.25	0.71	0.67	0.118	20°	5.69
63		0.88	—	0.75	1.50	0.787	1.260	0.08	0.55	0.47	2.07	0.32	2.83	3/8-24UNF DEPTH 0.63	0.30	0.71	1/2-20UNF	2.72	NPT1/4	3.54	0.51	0.47	M14 x 1.5	0.71	0.67	0.118	20°	5.69

With Mounting Bracket ø20 to ø63

Axial foot: NCGL



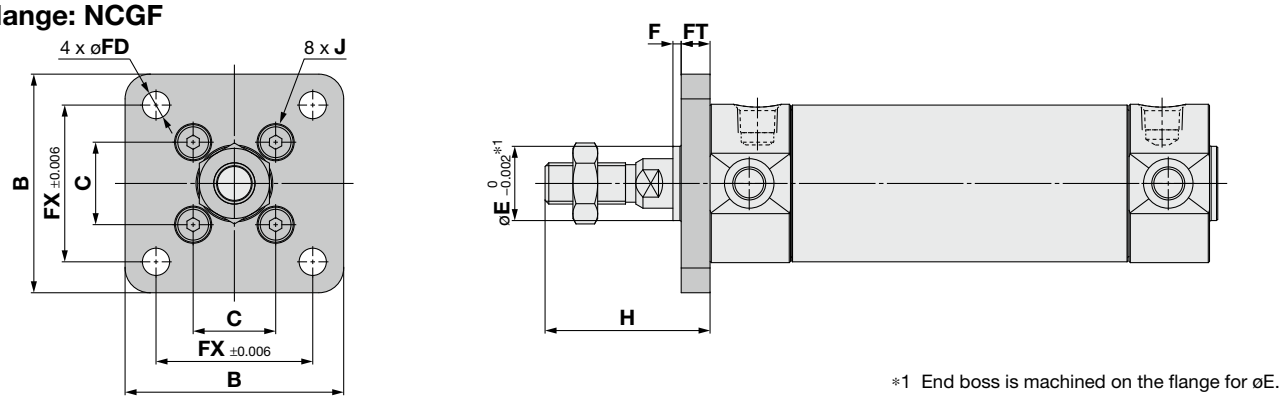
[Inch]

Bore size [mm]	B	C	J	LD	LH	LS	LT	LX	LZ	M	W	X	Y	Z	ZZ
20	1.44	0.55	#8-32UNC	0.27	0.81	3.82	0.12	1.50	1.88	0.16	1.02	0.56	0.44	0.44	4.70
25	1.52	0.65	#10-32UNF	0.27	0.81	3.82	0.12	1.50	1.88	0.19	1.22	0.56	0.44	0.56	4.82
32	1.83	0.79	#10-32UNF	0.28	1.00	4.28	0.12	1.88	2.50	0.26	1.50	0.75	0.75	0.88	5.91
40	2.02	1.02	1/4-28UNF	0.28	1.00	4.50	0.12	1.88	2.50	0.26	1.85	0.72	0.78	0.91	6.19
50	2.84	1.26	5/16-24UNF	0.34	1.50	5.53	0.25	2.25	3.12	0.32	2.28	1.00	0.62	1.07	7.22
63	3.29	1.5	3/8-24UNF	0.34	1.75	5.53	0.25	2.88	3.75	0.32	2.83	1.00	0.62	1.07	7.22

∗ Other dimensions are the same as basic style.

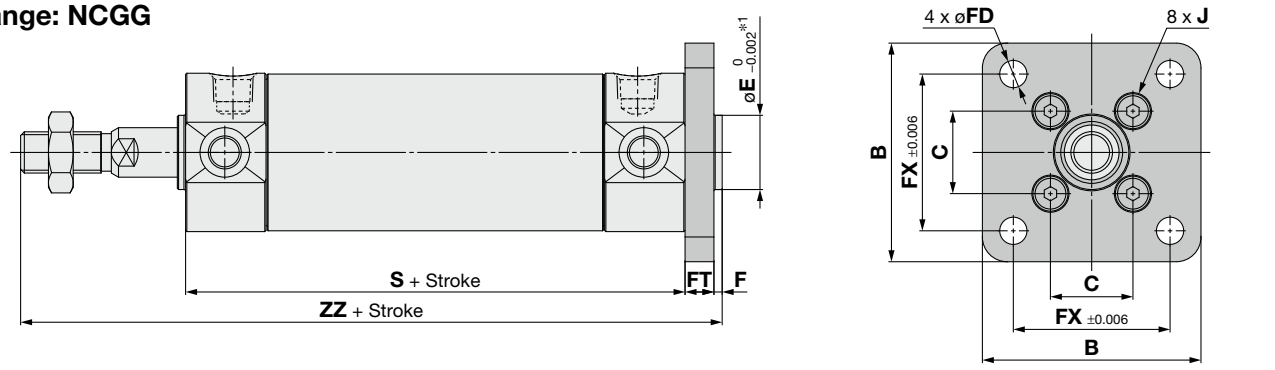
With Mounting Bracket

Front flange: NCGF



∗1 End boss is machined on the flange for øE.

Rear flange: NCGG



∗1 End boss is machined on the flange for øE.

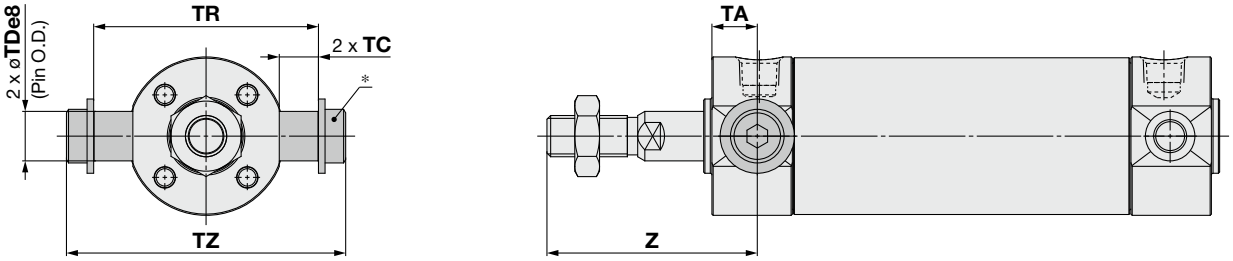
[Inch]

Bore size [mm]	B	C	J	E	F	FX	FD	FT	H	S	Head flange ZZ
20	1.57	0.55	#8-32UNC	0.472	0.08	1.10	0.22	0.24	1.00	2.72	4.12
25	1.73	0.65	#10-32UNF	0.551	0.08	1.26	0.22	0.28	1.12	2.72	4.28
32	2.09	0.79	#10-32UNF	0.709	0.08	1.50	0.28	0.28	1.63	2.8	4.87
40	2.40	1.02	1/4-28UNF	0.984	0.08	1.81	0.28	0.31	1.63	3.07	5.17
50	3.00	1.26	5/16-24UNF	1.181	0.08	2.28	0.35	0.35	2.07	3.54	6.12
63	3.62	1.5	3/8-24UNF	1.260	0.08	2.76	0.43	0.35	2.07	3.54	6.12

∗ Other dimensions are the same as basic style.

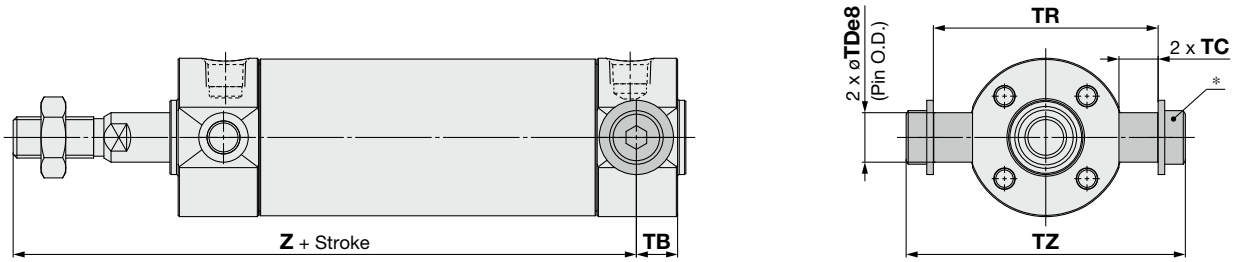
With Mounting Bracket

Front trunnion: NCGU



The part marked with an asterisk (*) is constructed of a trunnion pin, flat washer, and hexagon socket head cap screw.

Rear trunnion: NCGT



The part marked with an asterisk (*) is constructed of a trunnion pin, flat washer, and hexagon socket head cap screw.

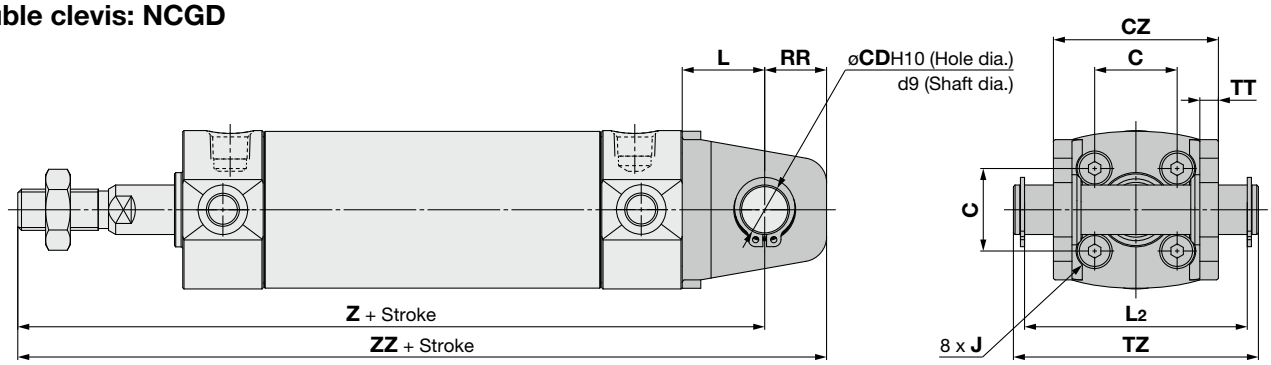
[Inch]

Bore size [mm]	TA	TB	TC	TDe8	TR	TZ	Rod side Z	Head side Z	Rod side ZZ	Head side ZZ
20	0.43	0.43	0.30	0.315 $^{-0.0009}_{-0.0019}$	1.54	1.87	1.43	3.29	3.80	4.10
25	0.43	0.43	0.28	0.394 $^{-0.0009}_{-0.0019}$	1.69	2.09	1.55	3.41	3.92	4.22
32	0.43	0.39	0.37	0.472 $^{-0.0013}_{-0.0023}$	2.15	2.67	2.06	4.04	4.51	4.96
40	0.47	0.39	0.42	0.551 $^{-0.0013}_{-0.0023}$	2.58	3.10	2.10	4.31	4.78	5.39
50	0.51	0.47	0.49	0.630 $^{-0.0013}_{-0.0023}$	3.15	3.88	2.58	5.14	5.69	6.39
63	0.51	0.47	0.57	0.709 $^{-0.0013}_{-0.0023}$	3.86	4.69	2.58	5.14	5.69	6.59

* Other dimensions are the same as basic style.

With Mounting Bracket

Double clevis: NCGD

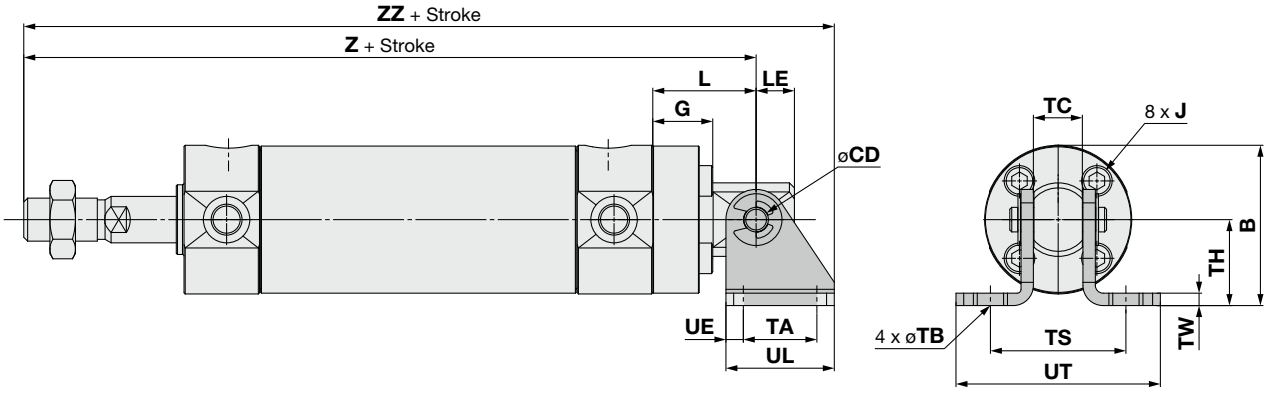


[inch]

Bore size [mm]	C	CD	CZ	J	L	L_2	RR	TT	TZ	Z	ZZ
20	0.55	0.31	1.14	#8-32UNC	0.55	1.52	0.43	0.13	1.71	4.35	5.08
25	0.65	0.39	1.30	#10-32UNF	0.63	1.68	0.51	0.13	1.89	4.55	5.28
32	0.79	0.47	1.57	#10-32UNF	0.79	2.13	0.59	0.18	2.34	5.30	6.14
40	1.02	0.55	1.93	1/4-28UNF	0.87	2.56	0.71	0.18	2.81	5.65	6.66
50	1.26	0.63	2.36	5/16-24UNF	0.98	3.13	0.79	0.24	3.39	6.67	7.84
63	1.5	0.71	2.91	3/8-24UNF	1.18	3.85	0.87	0.31	4.15	6.87	8.26

∗ Other dimensions are the same as basic style.

Basic Style with Single Clevis: NCGC



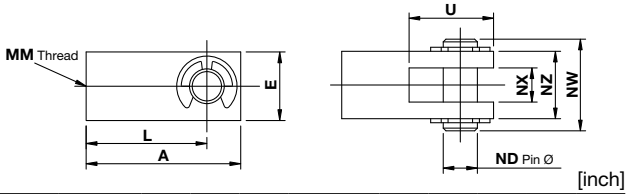
[Inch]

Bore size [mm]	B	CD	G	J	L	LE	TA	TB	TC	TH	TS	TW	UE	UL	UT	Z	ZZ
20	1.39	0.250	0.31	#8-32UNC	0.70	0.28	0.75	0.27	0.38	0.88	1.25	0.12	0.18	1.10	2.00	4.50	5.08
25	1.49	0.250	0.33	#10-32UNF	0.68	0.28	0.75	0.27	0.38	0.88	1.25	0.12	0.18	1.10	2.00	4.60	5.28
32	1.63	0.250	0.61	#10-32UNF	1.07	0.39	0.75	0.27	0.50	0.88	1.38	0.12	0.18	1.10	2.12	5.58	6.14
40	2.31	0.375	0.39	1/4-28UNF	0.88	0.38	1.00	0.27	0.62	1.38	1.86	0.18	0.25	1.50	2.62	5.66	6.66
50	2.52	0.375	0.47	5/16-24UNF	0.91	0.44	1.00	0.26	0.75	1.38	2.12	0.25	0.25	1.50	3.00	6.60	7.84
63	3.17	0.375	0.47	3/8-24UNF	0.91	0.44	1.00	0.26	0.75	1.75	2.12	0.25	0.25	1.50	3.00	6.60	8.26

∗ Other dimensions are the same as basic style.

NCG Series
Accessory Bracket Dimensions

NCG Single Knuckle Joint



[inch]

Part no.	Applicable bore [mm]	A	E	L	MM	ND	NX	NW	NZ	U
NY-075	20	1.19	0.51	0.94	1/4-28UNF	0.25	0.25	0.71	0.51	0.69
NY-106	25	1.19	0.51	0.94	5/16-24UNF	0.25	0.25	0.71	0.51	0.69
NY125	32-40	1.69	0.75	1.32	7/16-20UNF	0.38	0.38	1.02	0.75	0.94
NY-G050	50, 63	1.69	0.75	1.32	1/2-20UNF	0.38	0.38	1.02	0.75	0.94

NCG Knuckle Pin

[inch]

Part no.	Applicable bore [mm]	øD	L	ød	ℓ	m	t
NCG-SP020	20	0.25	0.83	0.21	0.65	0.06	0.03
NCG-SP025	25	0.25	0.83	0.21	0.65	0.06	0.03
NCG-SP032	32	0.25	0.98	0.21	0.76	0.08	0.03
NCG-SP040	40	0.38	1.24	0.30	1.00	0.08	0.04
NCG-SP050	50	0.38	1.50	0.30	1.24	0.09	0.04
NCG-SP063	63	0.38	1.50	0.30	1.24	0.09	0.04

NCG Clevis Pin

[inch]

Part no.	Applicable bore [mm]	øD	L	ød	ℓ	m	t
NCD-G02	20	0.315	1.71	0.30	1.52	0.06	0.04
NCD-G025	25	0.394	1.89	0.38	1.68	0.06	0.05
NCD-G03	32	0.472	2.34	0.45	2.12	0.08	0.05
NCD-G04	40	0.551	2.81	0.53	2.56	0.08	0.05
NCD-G05	50	0.630	3.38	0.60	3.13	0.08	0.05
NCD-G06	63	0.709	4.15	0.67	3.85	0.10	0.05

NCG Rod End Nut

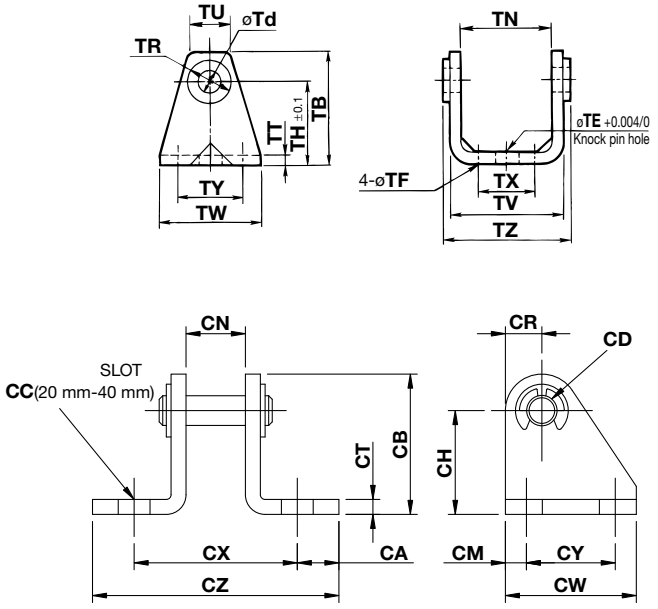
[inch]

Part no.	Applicable bore [mm]	d	H	B	C
JM-025	20	1/4-28UNF	0.16	0.44	(0.50)
JM-03	25	5/16-24UNF	0.19	0.50	(0.58)
JM-045	32, 40	7/16-20UNF	0.26	0.69	(0.79)
JM-05	50, 63	1/2-2UNF	0.32	0.75	(0.87)

NCG Series
Accessory Bracket Dimensions

NCG Pivot Bracket (Order separately)

ø20 to ø63 Material: Rolled steel



NCG Single Clevis Pivot Bracket

[inch]

Part no.	Applicable bore [mm]	CA	CB	CC	CD	CH	CM	CN	CR	CT	CX	CW	CY	CZ
NCG-PC020	20-25	0.35	1.18	0.27	0.25	0.87	0.18	0.38	0.31	0.12	1.25	1.10	0.75	1.95
NCG-PC032	32	0.35	1.18	0.27	0.25	0.87	0.18	0.50	0.31	0.12	1.37	1.10	0.75	2.07
NCG-PC040	40	0.36	1.75	0.27	0.38	1.38	0.25	0.63	0.37	0.18	1.87	1.50	1.00	2.60
NCG-PC050	50	0.44	1.75	0.76	0.38	1.38	0.25	0.75	0.37	0.24	2.12	1.50	1.00	3.00
NCG-PC063	63	0.44	2.12	0.76	0.38	1.75	0.25	0.75	0.37	0.24	2.12	1.50	1.00	3.00

NCG Pivot Bracket

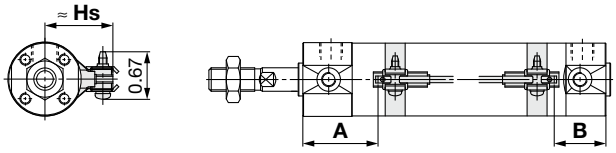
[inch]

Part no.	Applicable bore [mm]	TB	Td	TE	TF	TH	TN	TR	TT	TU	TV	TW	TX	TY	TZ
NCG-P020	20	1.42	0.315	0.39	0.22	0.98	(1.14)	0.51	0.12	(0.71)	(1.39)	1.65	0.63	1.10	1.50
NCG-P025	25	1.68	0.394	0.39	0.22	1.18	(1.30)	0.59	0.12	(0.81)	(1.55)	1.65	0.79	1.10	1.65
NCG-P032	32	1.97	0.472	0.39	0.27	1.38	(1.57)	0.67	0.18	(0.93)	(1.93)	1.89	0.87	1.10	2.10
NCG-P040	40	2.28	0.551	0.39	0.27	1.57	(1.93)	0.83	0.18	(1.07)	(2.28)	2.20	1.18	1.18	2.53
NCG-P050	50	2.75	0.630	0.79	0.35	1.97	(2.36)	0.91	0.24	(1.17)	(2.83)	2.52	1.42	1.42	3.10
NCG-P063	63	3.23	0.709	0.79	0.43	2.36	(2.91)	0.98	0.31	(1.35)	(3.54)	2.91	1.81	1.81	3.80

NCG Series
Auto Switch Mounting

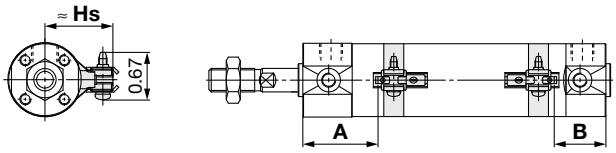
Auto Switch Proper Mounting Position (Detection at stroke end) and Mounting Height

Solid state auto switch
D-M9□, M9□W, M9□A



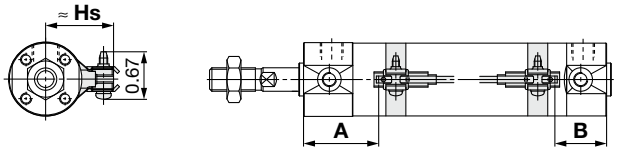
A and B are the dimensions from the end of the head cover/rod cover to the end of the auto switch.

D-M9□V, M9□WV, M9□AV



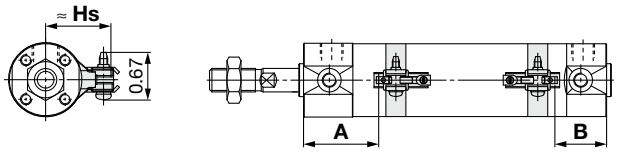
A and B are the dimensions from the end of the head cover/rod cover to the end of the auto switch.

Reed auto switch
D-A9□



A and B are the dimensions from the end of the head cover/rod cover to the end of the auto switch.

D-A9□V



A and B are the dimensions from the end of the head cover/rod cover to the end of the auto switch.

Auto Switch Proper Mounting Position (Detection at stroke end) and Mounting Height (D-M9/A9)

NCG-Z1 Rubber Bumper

Auto Switch Proper Mounting Position [inch]

Auto switch model / Bore size	D-M9□(V) D-M9□W(V) D-M9□A(V)		D-A9□(V)	
	A	B	A	B
20	1.16	1.08	1.00	0.93
25	1.14	1.10	0.98	0.94
32	1.16	1.16	1.00	1.00
40	1.30	1.30	1.14	1.14
50	1.56	1.52	1.40	1.36
63	1.56	1.52	1.40	1.36

NCG-Z1 Air Cushion

Auto Switch Proper Mounting Position [inch]

Auto switch model / Bore size	D-M9□(V) D-M9□W(V) D-M9□A(V)		D-A9□(V)	
	A	B	A	B
20	1.20	1.04	1.04	0.89
25	1.14	1.10	0.98	0.94
32	1.22	1.10	1.06	0.94
40	1.38	1.22	1.22	1.06
50	1.57	1.50	1.42	1.34
63	1.57	1.50	1.42	1.34

NCG-Z1

Auto Switch Mounting Height [inch]

Auto switch model / Bore size	D-M9□(V) D-M9□W(V) D-M9□A(V) D-A9□(V)
	Hs
20	1.04
25	1.14
32	1.28
40	1.46
50	1.67
63	1.95

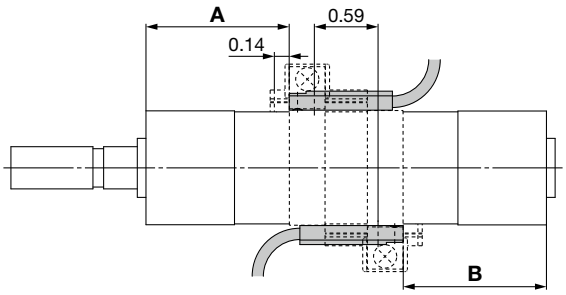
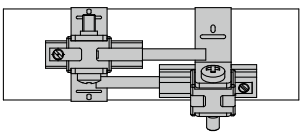
Minimum Stroke for Auto Switch Mounting (D-M9/A9)

[inch]

Auto switch model	Number of auto switches				
	With 1 pc.	With 2 pc.		With n pc.	
		Different surfaces	Same surface	Different surfaces	Same surface
D-M9□	0.20	0.59∗1	1.57∗1	$0.79 + 1.38\frac{(n-2)}{2}$ (n = 2, 4, 6⋯)∗3	2.17 + 1.38 (n – 2) (n = 2, 3, 4, 5⋯)
D-M9□W	0.39	0.59∗1	1.57∗1	$0.79 + 1.38\frac{(n-2)}{2}$ (n = 2, 4, 6⋯)∗3	2.17 + 1.38 (n – 2) (n = 2, 3, 4, 5⋯)
D-M9□A	0.39	0.98	1.57∗1	$0.98 + 1.38\frac{(n-2)}{2}$ (n = 2, 4, 6⋯)∗3	2.36 + 1.38 (n – 2) (n = 2, 3, 4, 5⋯)
D-M9□V	0.20	0.79	1.38	$0.79 + 1.38\frac{(n-2)}{2}$ (n = 2, 4, 6⋯)∗3	1.38 + 1.38 (n – 2) (n = 2, 3, 4, 5⋯)
D-M9□WV **D-M9□AV**	0.39	0.79	1.38	$0.79 + 1.38\frac{(n-2)}{2}$ (n = 2, 4, 6⋯)∗3	1.38 + 1.38 (n – 2) (n = 2, 3, 4, 5⋯)
D-A9□	0.20	0.59	1.18∗1	$0.59 + 1.38\frac{(n-2)}{2}$ (n = 2, 4, 6⋯)∗3	1.97 + 1.38 (n – 2) (n = 2, 3, 4, 5⋯)
D-A9□V	0.20	0.59	0.98	$0.59 + 1.38\frac{(n-2)}{2}$ (n = 2, 4, 6⋯)∗3	0.98 + 1.38 (n – 2) (n = 2, 3, 4, 5⋯)

∗1 Auto switch mounting

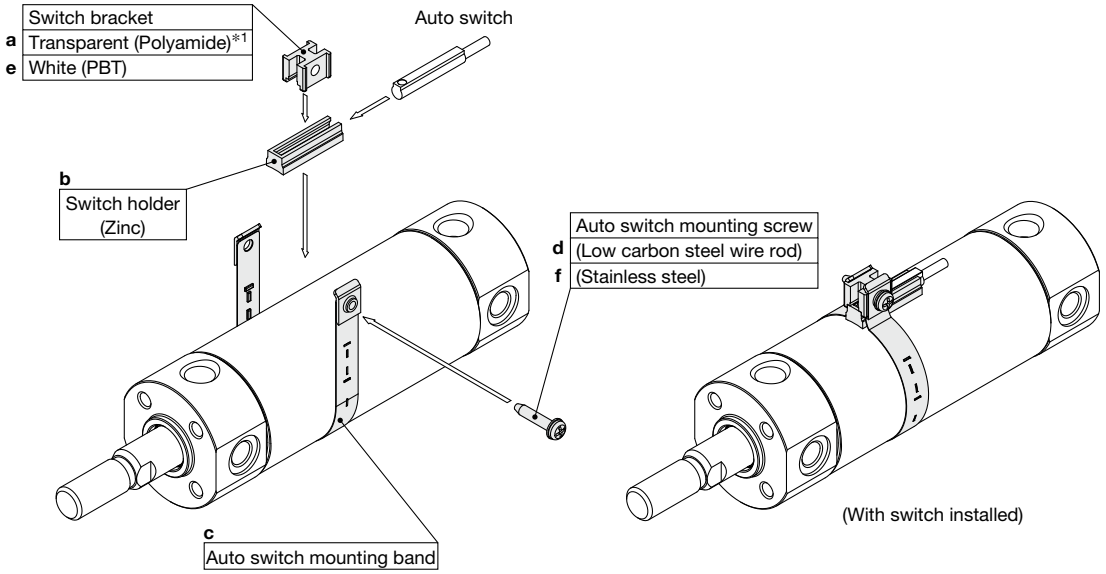
[inch]

Auto switch model	With 2 auto switches	
	Different surfaces∗1	Same surface∗1
	 Correct auto switch mounting position is 0.14 from the back face of the switch holder.	 The auto switch is mounted by slightly displacing it in a direction (cylinder tube circumferential exterior) so that the auto switch and lead wire do not interfere with each other.
D-M9□ **D-M9□W**	Less than 0.79 stroke∗2	Less than 2.17 stroke∗2
D-M9□A	Less than 0.79 stroke∗2	Less than 2.36 stroke∗2
D-A9□	—	Less than 1.97 stroke∗2

∗2 Minimum stroke for auto switch mounting in types other than those mentioned in ∗1

Auto Switch Mounting Brackets/Part Nos. (D-M9/A9)

Auto switch model	Bore size (mm)					
	20	**25**	**32**	**40**	**50**	**63**
D-M9□(V) **D-M9□W(V)** **D-A9□(V)**	∗1 BMA3-020 (A set of a, b, c, d)	∗1 BMA3-025 (A set of a, b, c, d)	∗1 BMA3-032 (A set of a, b, c, d)	∗1 BMA3-040 (A set of a, b, c, d)	∗1 BMA3-050 (A set of a, b, c, d)	∗1 BMA3-063 (A set of a, b, c, d)
D-M9□A(V)∗2	BMA3-020S (A set of b, c, e, f)	BMA3-025S (A set of b, c, e, f)	BMA3-032S (A set of b, c, e, f)	BMA3-040S (A set of b, c, e, f)	BMA3-050S (A set of b, c, e, f)	BMA3-063S (A set of b, c, e, f)



∗ Band (c) is mounted so that the projected part is on the internal side (contact side with the tube).

∗1 Since the switch bracket (made of polyamide) is affected in an environment where alcohol, chloroform, methylamines, hydrochloric acid, or sulfuric acid is splashed over, so it cannot be used.

∗2 When mounting a D-M9□A(V) type auto switch, if the switch bracket is mounted on the indicator light, it may damage the auto switch. Therefore, be sure to avoid mounting the switch bracket on the indicator light.

Band Mounting Brackets Set Part Nos.

Set part no.	Contents
BJ4-1	· Switch bracket (White/PBT) (e) · Switch holder (b)
BJ5-1	· Switch bracket (Transparent/Polyamide) (a) · Switch holder (b)

Operating Range (D-M9/A9)

[inch]

Auto switch model	Bore size					
	20	**25**	**32**	**40**	**50**	**63**
D-M9□(V) **D-M9□W(V)** **D-M9□A(V)**	0.18	0.20	0.18	0.22	0.20	0.22
D-A9□(V)	0.28	0.24	0.31	0.31	0.31	0.35

Cylinder Mounting Bracket, by Stroke/Auto Switch Mounting Surfaces (D-M9/A9)

[inch]

Auto switch model	Basic, Foot, Flange, Clevis			Trunnion		
	With 1 pc. (Rod cover side)	With 2 pc. (Different surfaces)	With 2 pc. (Same surface)	With 1 pc. (Rod cover side)	With 2 pc. (Different surfaces)	With 2 pc. (Same surface)
Auto switch mounting surface / Auto switch model	Port surface 	Port surface 	Port surface 			
D-M9□(V) D-M9□W(V) D-M9□A(V) D-A9□(V)	0.39 st or more	0.59 st or 1.73 st	1.77 st or more	0.39 st or more	0.59 st or 1.73 st	1.77 st or more

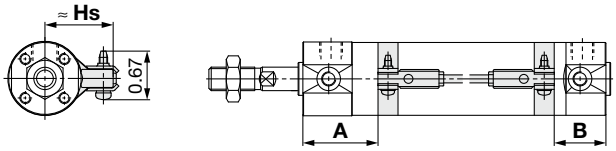
Other than the applicable auto switches listed in "How to Order," the following auto switches are also mountable.
Refer to the **Web Catalog** for detailed specifications.

Type	Model	Electrical entry	Features	Applicable bore size
Solid state	D-H7A1, H7A2, H7B	Grommet (In-line)	—	ø20 to ø63
	D-H7NW, H7PW, H7BW		Diagnostic indication (2-color indicator)	
	D-H7BA		Water resistant (2-color indicator)	
	D-G5NT		With timer	ø20 to ø63
Reed	D-C73, C76		—	ø20 to ø63
	D-C80		Without indicator light	
	D-B53		—	ø20 to ø63

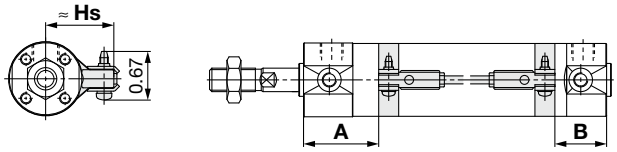
* With pre-wired connector is also available for solid state auto switches. For details, refer to the **Web Catalog**.
* Normally closed (NC = b contact) solid state auto switches (D-M9□E(V)) are also available. For details, refer to the **Web Catalog**.

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

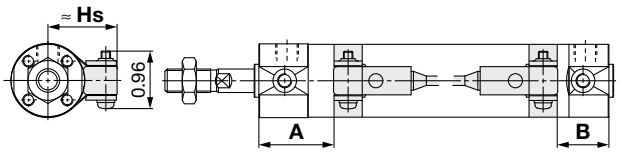
D-H7□, H7□W
D-H7NF, H7BA



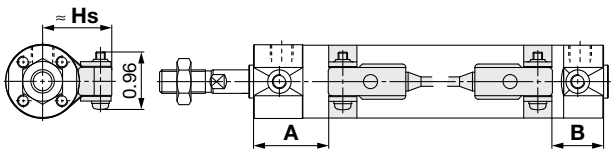
D-C7□, C80



D-G5□, G5□W, K59, K59W
D-G59F, G5BA, G5NT



D-B5□, B64, B59W



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

NCG-Z1 Rubber Bumper

Auto Switch Proper Mounting Position

[inch]

Auto switch model / Bore size	D-H7□ D-H7□W D-H7NF D-H7BA		D-C7□ D-C80		D-G5□ D-G5□W D-K59 D-K59W D-G59F D-G5BA D-G5NT		D-B5□ D-B64		D-B59W	
	A	B	A	B	A	B	A	B	A	B
20	0.98	0.91	1.02	0.94	0.85	0.77	0.79	0.75	0.91	0.83
25	0.96	0.93	1.00	0.96	0.83	0.79	0.77	0.77	0.89	0.85
32	0.98	0.98	1.02	1.02	0.85	0.85	0.79	0.79	0.91	0.91
40	1.12	1.12	1.16	1.16	0.98	0.98	0.93	0.93	1.04	1.03
50	1.38	1.34	1.42	1.38	1.24	1.20	1.18	1.14	1.30	1.26
63	1.38	1.34	1.42	1.38	1.24	1.20	1.18	1.14	1.30	1.26

NCG-Z1 Air Cushion

Auto Switch Proper Mounting Position

[inch]

Auto switch model / Bore size	D-H7□ D-H7□W D-H7NF D-H7BA		D-C7□ D-C80		D-G5□ D-G5□W D-K59 D-K59W D-G59F D-G5BA D-G5NT		D-B5□ D-B64		D-B59W	
	A	B	A	B	A	B	A	B	A	B
20	1.02	0.87	1.06	0.91	0.89	0.73	0.83	0.67	0.94	0.79
25	0.96	0.93	1.00	0.96	0.83	0.79	0.77	0.77	0.89	0.85
32	1.04	0.93	1.08	0.96	0.91	0.79	0.85	0.73	0.96	0.85
40	1.20	1.04	1.24	1.08	1.06	0.91	1.00	0.85	1.12	0.95
50	1.40	1.32	1.44	1.36	1.26	1.18	1.20	1.12	1.32	1.24
63	1.40	1.32	1.44	1.36	1.26	1.18	1.20	1.12	1.32	1.24

NCG-Z1

Auto Switch Mounting Height

[inch]

Auto switch model / Bore size	D-H7□ D-H7□W D-H7NF D-H7BA D-C7□ D-C80	D-G5□ D-G5□W D-K59 D-K59W D-G59F D-G5BA D-G5NT D-B5□ D-B64 D-B59W
	Hs	Hs
20	1.04	1.08
25	1.14	1.18
32	1.28	1.32
40	1.46	1.50
50	1.67	1.71
63	1.95	1.99

Minimum Stroke for Auto Switch Mounting (Other Auto Switches)

[inch]

Auto switch model	Number of auto switches				
	With 1 pc.	With 2 pc.		With n pc.	
		Different surfaces	Same surface	Different surfaces	Same surface
D-H7□ **D-H7□W** **D-H7NF** **D-H7BA**	0.39	0.59	2.36	$0.59 + 1.77\ \frac{(n-2)}{2}$ (n = 2, 4, 6⋯)*3	2.36 + 1.77 (n – 2) (n = 2, 3, 4, 5⋯)
D-C7□ **D-C80**	0.20	0.59	1.97	$0.59 + 1.77\ \frac{(n-2)}{2}$ (n = 2, 4, 6⋯)*3	1.97 + 1.77 (n – 2) (n = 2, 3, 4, 5⋯)
D-G5□/D-G5□W **D-K59□/D-K59□W** **D-G59F/D-G5BA** **D-G5NT** **D-B5□/D-B64**	0.20	0.79	2.95	$0.79 + 1.97\ \frac{(n-2)}{2}$ (n = 2, 4, 6⋯)*3	2.95 + 2.17 (n – 2) (n = 2, 3, 4, 5⋯)
D-B59W	0.39	0.79	2.76	$0.79 + 1.97\ \frac{(n-2)}{2}$ (n = 2, 4, 6⋯)*3	2.76 + 2.17 (n – 2) (n = 2, 3, 4, 5⋯)

Auto Switch Mounting Brackets/Part Nos. (Other Auto Switches)

Auto switch model	Bore size [mm]					
	20	**25**	**32**	**40**	**50**	**63**
D-H7□/D-H7□W **D-H7NF/D-H7BA** **D-C7□/D-C80**	BMA2-020A	BMA2-025A	BMA2-032A	BMA2-040A	BMA2-050A	BMA2-063A
D-H7BA	BMA2-020AS	BMA2-025AS	BMA2-032AS	BMA2-040AS	BMA2-050AS	BMA2-063AS
D-G5□/D-G5□W **D-K59/D-K59W** **D-G59F/D-G5BA** **D-G5NT/D-B5□** **D-B64/D-B59W**	BA-01	BA-02	BA-32	BA-04	BA-05	BA-06

[Stainless Steel Mounting Screw]

The following stainless steel mounting screw kit is available. Use it in accordance with the operating environment.
(Since the auto switch mounting bracket is not included, order it separately.)

BBA3: D-B5/B6/G5/K5 types

* Refer to the **Web Catalog** for details on the BBA3.
When the D-G5BA type auto switch is shipped independently, the BBA3 is attached.

Operating Range (Other Auto Switches)

[inch]

Auto switch model	Bore size					
	20	**25**	**32**	**40**	**50**	**63**
D-H7□ **D-H7□W** **D-H7NF** **D-H7BA**	0.16	0.16	0.18	0.20	0.24	0.26
D-C7□ **D-C80**	0.31	0.39	0.35	0.39	0.39	0.43
D-G5□/D-G5□W **D-K59/D-K59W** **D-G59F/D-G5BA** **D-G5NT**	0.16	0.16	0.18	0.20	0.24	0.26
D-B5□ **D-B64**	0.31	0.39	0.35	0.39	0.39	0.43
D-B59W	0.51	0.51	0.55	0.55	0.55	0.67

Cylinder Mounting Bracket, by Stroke/Auto Switch Mounting Surfaces (Other Auto Switches)

[inch]

Auto switch model	Basic, Foot, Flange, Clevis			Trunnion		
	With 1 pc. (Rod cover side)	With 2 pc. (Different surfaces)	With 2 pc. (Same surface)	With 1 pc. (Rod cover side)	With 2 pc. (Different surfaces)	With 2 pc. (Same surface)
Auto switch mounting surface / Auto switch model	Port surface 	Port surface 	Port surface 			
D-H7□ **D-H7□W** **D-H7NF** **D-H7BA**	0.39 st or more	0.59 st or 2.32 st	2.36 st or more	0.39 st or more	0.59 st or 2.32 st	2.36 st or more
D-C7□ **D-C80**	0.39 st or more	0.59 st or 1.93 st	1.97 st or more	0.39 st or more	0.59 st or 1.93 st	1.97 st or more
D-G5□ **D-G5□W** **D-K59** **D-K59W** **D-G59F** **D-G5BA** **D-G5NT** **D-B5□** **D-B64**	0.39 st or more	0.59 st or 2.91 st	2.95 st or more	0.39 st or more	0.59 st or 2.91 st	2.95 st or more
D-B59W	0.59 st or more	0.79 st or 2.91 st	2.95 st or more	0.59 st or more	0.79 st or 2.91 st	2.95 st or more

∗ Adjust the auto switch mounting angle according to the customer's application.

NCG Series
Specific Product Precautions

Be sure to read this before handling the products. Refer to the back cover for safety instructions. For actuator and auto switch precautions, refer to the "Handling Precautions for SMC Products" and the "Operation Manual" on the SMC website.

<Precautions on each series>

Handling

⚠Warning

1. Do not operate the cushion valve in the fully closed or fully opened state.

Using it in the fully closed state will cause the cushion seal to be damaged. Using it in the fully opened state will cause the piston rod assembly or the cover to be damaged.

2. Do not turn the cushion valve the number of rotations shown below or more from its fully closed state.

If it is turned the number of rotations shown below or more, the cushion valve may come off.

[mm]

Bore size (mm)	Rotations	Hexagon wrench nominal size
20	2	1.5
25	4.5	1.5
32	4.5	1.5
40	5	1.5
50	3	3
63	4.5	3

3. Do not open the cushion valve after rotating it numerous times in a row. Though uncommon, there are cases in which the cushion valve may leak air.

The cushion valve should be adjusted by gradually opening it while checking the operation of the cylinder cushion. In the unlikely event that air leakage occurs, return the cushion needle to the fully-closed state, and readjust the cushion needle to the desired position.

4. Operate within the specified cylinder speed and kinetic energy.

Otherwise, cylinder and seal damage may occur.

5. When a cylinder is operated with one end fixed and other free (basic, flange types), a bending moment may act on the cylinder due to the vibration generated at the stroke end, which can damage the cylinder. In such a case, install a mounting bracket to suppress the vibration of the cylinder body or reduce the piston speed so that the cylinder does not vibrate. Also, use a mounting bracket to suppress vibrations when moving the cylinder body or when a cylinder is operated horizontally and fixed at one end at a high speed and frequency.

⚠Caution

1. Use caution regarding the cushion performance in the low-speed range.

There may be individual performance and effect variances when used near 50 mm/s. Please consult with SMC about usage.

2. Do not apply excessive lateral load to the piston rod.

Easy checking method

Minimum operating pressure after the cylinder is mounted to the equipment (MPa) = Minimum operating pressure of cylinder (MPa) + {Load weight (kg) x 9.8 x Friction coefficient of guide/Sectional area of cylinder (mm^2)}

If smooth operation is confirmed within the above value, the load on the cylinder is the resistance of the thrust only and it can be judged as having no lateral load.

3. Do not use the air cylinder as an air-hydro cylinder.

This may result in oil leak.

4. Install a rod boot without twisting.

If the cylinder is installed with its bellows twisted, it could damage the bellows.

5. Tighten clevis bracket mounting bolts with the following proper tightening torque.

ø20: 1.5 N·m, ø25 to 32: 2.9 N·m, ø40: 4.9 N·m,

ø50: 11.8 N·m, ø63: 24.5 N·m

Disassembly/Replacement

⚠Warning

1. Only people who have sufficient knowledge and experience are allowed to replace seals.

The person who disassembles and reassembles the cylinder is responsible for the safety of the product. Repeatedly disassembling and reassembling the product may cause wearing or deformation of the screws as well as a decline in screw tightening strength. When reassembling the product, be sure to check the cover and tubing screws for wear, deformities, or any other abnormalities. Operating the product with damaged screws may result in the cover or tubing coming off during operation, which could lead to a serious accident. Caution must be taken to avoid such incidents.

⚠Caution

1. Do not replace the bushings.

The bushings are press-fit. To replace them, they must be replaced together with the cover assembly.

2. To replace a seal, apply grease to the new seal before installing it.

If the cylinder is put into operation without applying grease to the seal, it could cause the seal to wear significantly, leading to premature air leakage.

3. Cylinders with ø50 or larger bore sizes cannot be disassembled.

When disassembling cylinders with bore sizes of ø20 through ø40, grip the double flat part of either the tube cover or the rod cover with a vise and loosen the other side with a wrench or a monkey wrench etc., and then remove the cover. When re-tightening, tighten approximately 2 degrees more than the original position. (Cylinders with ø50 or larger bore sizes are tightened with a large tightening torque and cannot be disassembled. If disassembly is required, please contact SMC.)

4. When replacing seals, take care not to hurt your hand or finger on the corners of parts.

⚠ 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.

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

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

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

*1) ISO 4414: Pneumatic fluid power - General rules and safety requirements for systems and their components
ISO 4413: Hydraulic fluid power - General rules and safety requirements for systems and their components
IEC 60204-1: Safety of machinery - Electrical equipment of machines - Part 1: General requirements
ISO 10218-1: Robots and robotic devices - Safety requirements for industrial robots - Part 1:Robots
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. SMC products cannot be used beyond their specifications. They are not developed, designed, and manufactured to be used under the following conditions or environments. Use under such conditions or environments is not allowed.

1. Conditions and environments outside of the given specifications, or use outdoors or in a place exposed to direct sunlight.
2. Use for nuclear power, railways, aviation, space equipment, ships, vehicles, military application, equipment affecting human life, body, and property, combustion equipment, entertainment equipment, emergency shut-off circuits, press clutches, brake circuits, safety equipment, etc., and use for applications that do not conform to standard specifications such as catalogs and operation manuals.
3. Use for interlock circuits, except for use with double interlock such as installing a mechanical protection function in case of failure. Please periodically inspect the product to confirm that the product is operating properly.

⚠ Caution

SMC develops, designs, and manufactures products to be used for automatic control equipment, and provides them for peaceful use in manufacturing industries.
Use in non-manufacturing industries is not allowed.
Products SMC manufactures and sells cannot be used for the purpose of transactions or certification specified in the Measurement Act of each country. The new Measurement Act prohibits use of any unit other than SI units in Japan.

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) **Suction cups (Vacuum pads) are excluded from this 1 year warranty.**
A suction cup (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 suction cup (vacuum pad) or failure due to the deterioration of rubber material are not allowed 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 the "Handling Precautions for SMC Products" (M-E03-3) and "Operation Manual" before use.

SMC Corporation