

Compact Cylinder Double Acting, Double Rod Series *NCQ8W*

Bore size: 056(9/16"), 075(3/4"), 106(1 1/16"), 150(1 1/2"), 200(2"), 250(2 1/2"), 300(3"), 400(4")

How to Order

Without auto switch

NCQ8W **B** **056** - **025**

With auto switch

NCDQ8W **B** **056** - **025** - **M9BW** **S** -

Built-in magnet

Double rod

Mounting

B	Through-hole
A	Both ends tapped
E	Screw clearance hole, front mount
N	Screw clearance hole, rear mount

Nominal bore size

056	9/16"
075	3/4"
106	1 1/16"
150	1 1/2"
200	2"
250	2 1/2"
300	3"
400	4"

Cylinder stroke (in)

Symbol	Stroke (in)	Symbol	Stroke (in)	Symbol	Stroke (in)	Symbol	Stroke (in)
012	1/8"	062	5/8"	125	1 1/4"	250	2 1/2"
025	1/4"	075	3/4"	150	1 1/2"	300	3"
037	3/8"	087	7/8"	175	1 3/4"	350	3 1/2"
050	1/2"	100	1"	200	2"	400	4"

Note 1) With switch is available on strokes 025(1/4") and greater.

X-Option

Nil	Standard
XB6	High temp.
XC4	With scraper

Note 3) XB6: Not available with magnet.

*Refer to page 36.

Number of auto switches

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

Auto switch type

Nil	Without auto switch (Built-in magnet cylinder)
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*Refer to the table below for auto switch model numbers.

*Auto switches are shipped together, (but not assembled).

Body option

Nil	Standard (Female rod end)
C	Rubber bumper
M	Male rod end

Note 2) Stroke will be reduced by 0.06" for rubber bumper type.

*Combination of body options(CM) is available.

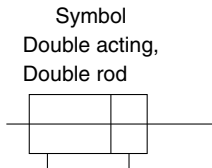
Applicable Auto Switches

Type	Special function	Electrical entry	Indicator/light	Wiring (output)	Load voltage			Auto switch model				Lead wire length (in)*				Applicable load	
					DC		AC	Perpendicular	In-line	20(0.5m) (Nil)	39(1m) (M)	118(3m) (L)	197(5m) (Z)				
					5 V, 12 V	12 V	24 V							5 V, 12 V	100 V		
Solid state switch	—	Grommet	—	3-wire (NPN)	24 V	5 V, 12 V	—	M9NV	M9N	●	—	●	○	IC circuit	Relay, PLC		
				3-wire (PNP)				M9PV	M9P	●	—	●	○				
				2-wire				M9BV	M9B	●	—	●	○				
	Diagnostic indication (2-color display)	Grommet	Yes	3-wire (NPN)	24 V	5 V, 12 V	—	M9NVW	M9NW	●	●	●	○	IC circuit			
				3-wire (PNP)				M9PVW	M9PW	●	●	●	○				
				2-wire				M9BWW	M9BW	●	●	●	○				
				—				F9BA	—	—	●	○					
Reed switch	—	Grommet	—	3-wire (NPN equiv.)	24 V	5 V, 12 V	100 V	A96V	A96	●	—	●	—	IC circuit	—		
				2-wire				A90V	A90	●	—	●	—	IC circuit			
				—				A93V	A93	●	—	●	—	—			

*Lead wire length symbols: 20in (0.5 m)..... Nil (Example) M9NV M9NVW M9NW L M9NWZ
39in (1 m)..... M
118in (3 m)..... L
197in (5 m)..... Z

*Solid state switches marked with a "○" symbol are produced upon receipt of order.
*39 in (1 m: M): Available in the D-M9□W(V) only.

Compact Cylinder Double Acting, Double Rod *Series NCQ8W*



Specifications

Bore size	056(9/16")	075(3/4")	106(1 1/16")	150(1 1/2")	200(2")	250(2 1/2")	300(3")	400(4")
Piping size	#10-32UNF	#10-32UNF	NPT1/8	NPT1/8	NPT1/8	NPT1/4	NPT1/4	NPT3/8
Type	Pneumatic (Non-lube)							
Action	Double acting, Double rod							
Fluid	Air							
Proof pressure	300PSI (2.1MPa)							
Maximum operating pressure	200PSI (1.4MPa)							
Minimum operating pressure	11PSI (0.07MPa)	8PSI (0.05MPa)						
Ambient and fluid temperature	Without auto switch	15 to 150°F (-10 to 65°C) (No freezing)						
	With auto switch	15 to 140°F (-10 to 60°C) (No freezing)						
Cushion	Rubber bumper (C)							
Rod end thread	Female thread							
Rod end thread tolerance	ANSI/ASME B 1.1-1989							
Stroke tolerance	0 to +0.04 in (+1.0mm)							
Mounting	Through-hole (B), Both ends tapped (A), Clevis, SCH (E,N)							
Piston speed	2 to 20in/sec (50 to 500mm/s)						2 to 11.8in/sec (50 to 300mm/s)	

Applicable Stroke

Unit: inch

Bore size	Standard stroke
056(9/16")	
075(3/4")	012(1/8"), 025(1/4"), 037(3/8")
106(1 1/16")	050(1/2"), 062(5/8"), 075(3/4")
150(1 1/2")	087(7/8"), 100(1"), 125(1 1/4")
200(2")	150(1 1/2"), 175(1 3/4"), 200(2")
250(2 1/2")	250(2 1/2"), 300(3")
300(3")	350(3 1/2"), 400(4")
400(4")	

* With switch is available on strokes 025(1/4") and greater.

Theoretical Output Table

Unit: lbf

Bore size (in)	Operating pressure/PSI (MPa)			
	45(0.3)	75(0.5)	145(1.0)	200(1.4)
056(9/16")	8.87	14.6	28.6	39.2
075(3/4")	16.4	27.0	52.9	72.5
106(1 1/16")	30.8	50.8	99.5	136
150(1 1/2")	65.7	108	212	290
200(2")	121	200	391	536
250(2 1/2")	201	330	648	888
300(3")	278	463	927	1298
	304	506	1013	1418
400(4")	506	844	1689	2364
	540	900	1801	2522

Weight Table

Product's Weight (Double Acting, Double Rod, Without Switch)

(OZ)

Model	Stroke	012	025	037	050	062	075	087	100	125	150	175	200	250	300	350	400
		(1/8")	(1/4")	(3/8")	(1/2")	(5/8")	(3/4")	(7/8")	(1")	(1 1/4")	(1 1/2")	(1 3/4")	(2")	(2 1/2")	(3")	(3 1/2")	(4")
NCQ8W□056-□		1.33	1.39	1.46	1.52	1.69	1.86	2.03	2.20	2.54	2.88	3.21	3.55	4.23	4.91	5.58	6.26
NCQ8W□075-□		1.92	2.04	2.15	2.26	2.52	2.77	3.02	3.28	3.79	4.29	4.80	5.31	6.33	7.34	8.36	9.37
NCQ8W□106-□		3.71	4.14	4.56	4.99	5.42	5.84	6.34	6.84	7.83	8.83	9.82	10.9	12.8	14.8	16.8	18.8
NCQ8W□150-□		7.01	7.80	8.50	9.21	9.91	9.63	10.4	11.1	12.5	13.9	15.4	16.8	19.6	22.4	25.3	28.1
NCQ8W□200-□		12.9	13.7	14.5	15.4	16.2	17.0	16.5	17.3	19.0	20.7	22.3	24.0	27.3	30.6	33.9	37.2
NCQ8W□250-□		18.7	19.6	20.5	21.3	22.2	21.0	21.9	22.8	24.6	26.3	28.1	29.9	33.4	37.0	40.6	44.1
NCQ8W□300-□		22.7	24.3	25.9	27.4	29.0	30.5	31.6	33.1	35.9	39.1	42.2	45.3	51.6	57.8	64.0	70.2
NCQ8W□400-□		38.8	41.3	43.4	45.4	47.5	49.6	51.8	53.7	57.7	61.9	66.0	70.2	78.5	86.9	95.2	103.6

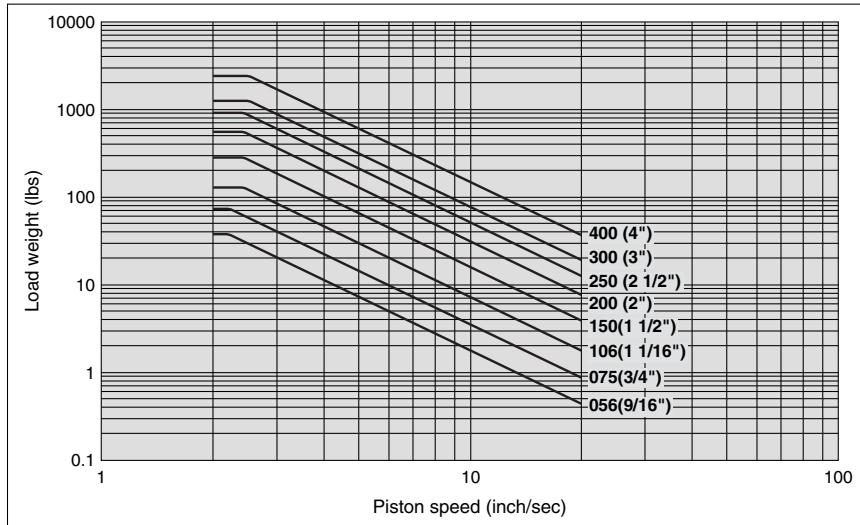
Product's Weight (Double Acting, Double Rod, With Switch)

(OZ)

Model	Stroke	012	025	037	050	062	075	087	100	125	150	175	200	250	300	350	400
		(1/8")	(1/4")	(3/8")	(1/2")	(5/8")	(3/4")	(7/8")	(1")	(1 1/4")	(1 1/2")	(1 3/4")	(2")	(2 1/2")	(3")	(3 1/2")	(4")
NCDQ8W□056-□		—	2.70	2.76	2.72	2.89	3.06	3.23	3.40	3.74	4.08	4.41	4.75	5.43	6.11	6.78	7.46
NCDQ8W□075-□		—	4.22	4.34	4.24	4.49	4.75	5.00	5.25	5.76	6.27	6.78	7.28	8.30	9.32	10.4	11.4
NCDQ8W□106-□		—	8.19	8.62	9.04	9.47	9.19	9.69	10.2	11.2	12.2	13.2	14.2	16.2	18.2	20.2	22.2
NCDQ8W□150-□		—	17.3	18.0	18.7	19.4	15.5	16.2	16.9	18.3	19.8	21.2	22.6	25.4	28.3	31.1	33.9
NCDQ8W□200-□		—	33.3	34.2	35.0	35.8	36.6	24.7	25.5	27.2	28.8	30.5	32.2	35.5	38.8	42.1	45.4
NCDQ8W□250-□		—	50.0	50.9	51.7	52.6	31.2	32.0	32.9	34.7	36.5	38.3	40.0	43.6	47.2	50.7	54.3
NCDQ8W□300-□		—	54.1	55.5	56.9	58.3	60.0	61.5	63.1	66.2	69.3	72.4	75.5	81.7	87.9	94.1	100.3
NCDQ8W□400-□		—	83.4	85.3	87.1	89.0	91.3	93.4	95.5	99.6	103.8	108.0	112.1	120.5	128.8	137.2	145.5

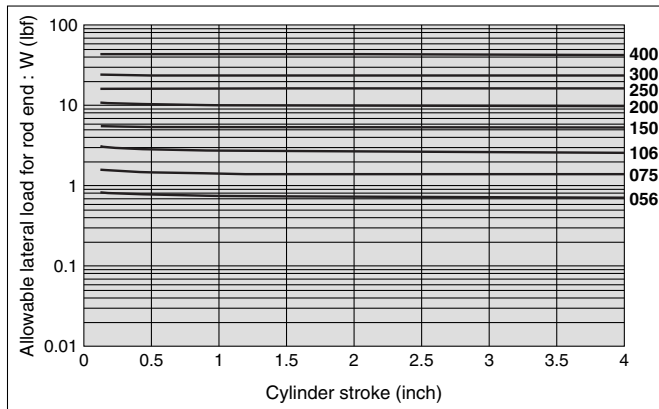
Series NCQ8W

Allowable Kinetic Energy

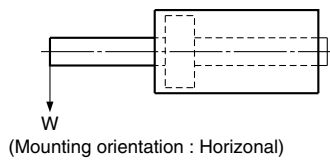
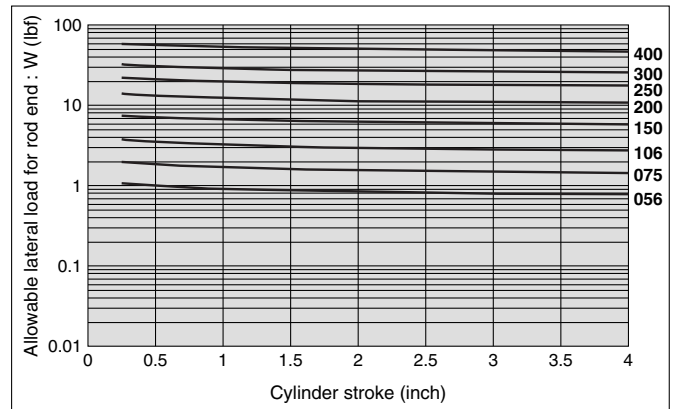


Allowable lateral load at rod end

Without Auto Switch



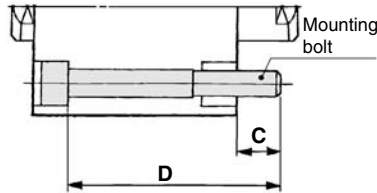
With Auto Switch



Compact Cylinder Double Acting, Double Rod *Series NCQ8W*

Mounting Bolt

Mounting method: Mounting bolt for through-hole style of NCQ8WB is available as an option.



Mounting Bolt Size for NCQ8WB056 to 400-□(Without Auto Switch)

Model	C	D	Bolt size	
				order number
NCQ8WB056-012	0.18	7/8	#4-40UNC-7/8	
025		1		1
037		1 1/8		1 1/8
050		1 1/4		1 1/4
062		1 3/8		1 3/8
075		1 1/2		1 1/2
087		1 5/8		1 5/8
100		1 3/4		1 3/4
125		2		2
150		2 1/4		2 1/4
175		2 1/2		2 1/2
200		2 3/4		2 3/4
250		3 1/4		3 1/4
300		3 3/4		3 3/4
350		4 1/4		4 1/4
400	4 3/4		4 3/4	
NCQ8WB075-012	0.21	7/8	#6-32UNC-7/8	
025		1		1
037		1 1/8		1 1/8
050		1 1/4		1 1/4
062		1 3/8		1 3/8
075		1 1/2		1 1/2
087		1 5/8		1 5/8
100		1 3/4		1 3/4
125		2		2
150		2 1/4		2 1/4
175		2 1/2		2 1/2
200		2 3/4		2 3/4
250		3 1/4		3 1/4
300		3 3/4		3 3/4
350		4 1/4		4 1/4
400	4 3/4		4 3/4	
NCQ8WB106-012	0.21	1 1/8	#6-32UNC-1 1/8	
025		1 1/4		1 1/4
037		1 3/8		1 3/8
050		1 1/2		1 1/2
062		1 5/8		1 5/8
075		1 3/4		1 3/4
087		1 7/8		1 7/8
100		2		2
125		2 1/4		2 1/4
150		2 1/2		2 1/2
175		2 3/4		2 3/4
200		3		3
250		3 1/2		3 1/2
300		4		4
350		4 1/2		4 1/2
400	5		5	

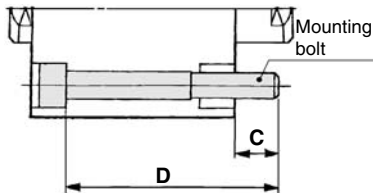
Model	C	D	Bolt size	
				order number
NCQ8WB150-012	0.33	1 1/4	#10-24UNC-1 1/4	
025		1 3/8		1 3/8
037		1 1/2		1 1/2
050		1 5/8		1 5/8
062		1 3/4		1 3/4
075		1 7/8		1 7/8
087		2		2
100		2 1/8		2 1/8
125		2 3/8		2 3/8
150		2 5/8		2 5/8
175		2 7/8		2 7/8
200		3 1/8		3 1/8
250		3 5/8		3 5/8
300		4 1/8		4 1/8
350		4 5/8		4 5/8
400	5 1/8		5 1/8	
NCQ8WB200-012	0.39	1 3/8	#10-24UNC-1 3/8	
025		1 1/2		1 1/2
037		1 5/8		1 5/8
050		1 3/4		1 3/4
062		1 7/8		1 7/8
075		2		2
087		2 1/8		2 1/8
100		2 1/4		2 1/4
125		2 1/2		2 1/2
150		2 3/4		2 3/4
175		3		3
200		3 1/4		3 1/4
250		3 3/4		3 3/4
300		4 1/4		4 1/4
350		4 3/4		4 3/4
400	5 1/4		5 1/4	
NCQ8WB250-012	0.45	1 5/8	1/4-20UNC-1 5/8	
025		1 3/4		1 3/4
037		1 7/8		1 7/8
050		2		2
062		2 1/8		2 1/8
075		2 1/4		2 1/4
087		2 3/8		2 3/8
100		2 1/2		2 1/2
125		2 3/4		2 3/4
150		3		3
175		3 1/4		3 1/4
200		3 1/2		3 1/2
250		4		4
300		4 1/2		4 1/2
350		5		5
400	5 1/2		5 1/2	

Model	C	D	Bolt size	
				order number
NCQ8WB300-012	0.38	1 5/8	1/4-20UNC-1 5/8	
025		1 3/4		1 3/4
037		1 7/8		1 7/8
050		2		2
062		2 1/8		2 1/8
075		2 1/4		2 1/4
087		2 3/8		2 3/8
100		2 1/2		2 1/2
125		2 3/4		2 3/4
150		3		3
175		3 1/4		3 1/4
200		3 1/2		3 1/2
250		4		4
300		4 1/2		4 1/2
350		5		5
400	5 1/2		5 1/2	
NCQ8WB400-012	0.52	2	5/16-18UNC-2	
025		2 1/8		2 1/8
037		2 1/4		2 1/4
050		2 3/8		2 3/8
062		2 1/2		2 1/2
075		2 5/8		2 5/8
087		2 3/4		2 3/4
100		2 7/8		2 7/8
125		3 1/8		3 1/8
150		3 3/8		3 3/8
175		3 5/8		3 5/8
200		3 7/8		3 7/8
250		4 3/8		4 3/8
300		4 7/8		4 7/8
350		5 3/8		5 3/8
400	5 7/8		5 7/8	

Series NCQ8W

Mounting Bolt

Mounting method: Mounting bolt for through-hole style of NCQ8WB is available as an option.



Mounting Bolt Size for NCDQ8WB056 to 400-□(With Auto Switch)

Model	C	D	Bolt size
			order number
NCDQ8WB056-025	0.18	1 7/8	#4-40UNC-1 7/8
037		2	2
050		2 1/8	2 1/8
062		2 1/4	2 1/4
075		2 3/8	2 3/8
087		2 1/2	2 1/2
100		2 5/8	2 5/8
125		2 7/8	2 7/8
150		3 1/8	3 1/8
175		3 3/8	3 3/8
200		3 5/8	3 5/8
250		4 1/8	4 1/8
300		4 5/8	4 5/8
350		5 1/8	5 1/8
400		5 5/8	5 5/8
NCDQ8WB075-025		0.21	1 7/8
037	2		2
050	2 1/8		2 1/8
062	2 1/4		2 1/4
075	2 3/8		2 3/8
087	2 1/2		2 1/2
100	2 5/8		2 5/8
125	2 7/8		2 7/8
150	3 1/8		3 1/8
175	3 3/8		3 3/8
200	3 5/8		3 5/8
250	4 1/8		4 1/8
300	4 5/8		4 5/8
350	5 1/8		5 1/8
400	5 5/8		5 5/8
NCDQ8WB106-025	0.21		2 1/8
037		2 1/4	2 1/4
050		2 3/8	2 3/8
062		2 1/2	2 1/2
075		2 5/8	2 5/8
087		2 3/4	2 3/4
100		2 7/8	2 7/8
125		3 1/8	3 1/8
150		3 3/8	3 3/8
175		3 5/8	3 5/8
200		3 7/8	3 7/8
250		4 3/8	4 3/8
300		4 7/8	4 7/8
350		5 3/8	5 3/8
400		5 7/8	5 7/8

Model	C	D	Bolt size
			order number
NCDQ8WB150-025	0.33	2 1/4	#10-24UNC-2 1/4
037		2 3/8	2 3/8
050		2 1/2	2 1/2
062		2 5/8	2 5/8
075		2 3/4	2 3/4
087		2 7/8	2 7/8
100		3	3
125		3 1/4	3 1/4
150		3 1/2	3 1/2
175		3 3/4	3 3/4
200		4	4
250		4 1/2	4 1/2
300		5	5
350		5 1/2	5 1/2
400		6	6
NCDQ8WB200-025		0.39	2 3/8
037	2 1/2		2 1/2
050	2 5/8		2 5/8
062	2 3/4		2 3/4
075	2 7/8		2 7/8
087	3		3
100	3 1/8		3 1/8
125	3 3/8		3 3/8
150	3 5/8		3 5/8
175	3 7/8		3 7/8
200	4 1/8		4 1/8
250	4 5/8		4 5/8
300	5 1/8		5 1/8
350	5 5/8		5 5/8
400	6 1/8		6 1/8
NCDQ8WB250-025	0.45		2 5/8
037		2 3/4	2 3/4
050		2 7/8	2 7/8
062		3	3
075		3 1/8	3 1/8
087		3 1/4	3 1/4
100		3 3/8	3 3/8
125		3 5/8	3 5/8
150		3 7/8	3 7/8
175		4 1/8	4 1/8
200		4 3/8	4 3/8
250		4 7/8	4 7/8
300		5 3/8	5 3/8
350		5 7/8	5 7/8
400		6 3/8	6 3/8

Model	C	D	Bolt size
			order number
NCDQ8WB300-025	0.38	2 5/8	1/4-20UNC-2 5/8
037		2 3/4	2 3/4
050		2 7/8	2 7/8
062		3	3
075		3 1/8	3 1/8
087		3 1/4	3 1/4
100		3 3/8	3 3/8
125		3 7/8	3 7/8
150		3 7/8	3 7/8
175		4 1/8	4 1/8
200		4 3/8	4 3/8
250		4 7/8	4 7/8
300		5 3/8	5 3/8
350		5 7/8	5 7/8
400		6 3/8	6 3/8
NCDQ8WB400-025		0.52	3
037	3 1/8		3 1/8
050	3 1/4		3 1/4
062	3 3/8		3 3/8
075	3 1/2		3 1/2
087	3 5/8		3 5/8
100	3 3/4		3 3/4
125	4		4
150	4 1/4		4 1/4
175	4 1/2		4 1/2
200	4 3/4		4 3/4
250	5 1/4		5 1/4
300	5 3/4		5 3/4
350	6 1/4		6 1/4
400	6 3/4		6 3/4

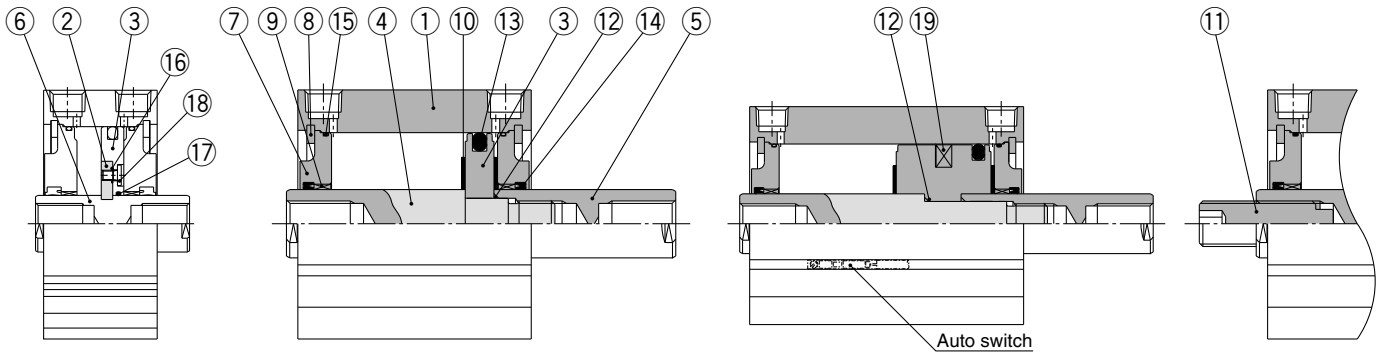
Compact Cylinder Double Acting, Double Rod *Series NCQ8W*

Construction

Without auto switch

With auto switch

Male thread



For stroke
012(1/8")~075(3/4")

For stroke 087(7/8")~400(4")

Parts List

No.	Description	Material	Remarks
1	Cylinder tube	Aluminum alloy	Hard anodized
2	Piston Ring	Stainless steel	300 and 400 only
3	Piston	Aluminum alloy	Chromated
4	Piston Rod A	Stainless steel	056 to 106
		Carbon steel	150 to 400, Hard chrome plated
5	Piston Rod B	Stainless steel	056 to 106
		Carbon steel	150 to 400, Hard chrome plated
6	Piston Rod C	Carbon steel	300 and 400 only
7	Collar	Aluminum alloy	Anodized
8	Snap ring	Carbon tool steel	Phosphate coated
9	Bushing	Phosphor bronze alloy	200 to 400
10	Rubber bumper	NBR	Use for with rubber bumper only
11	Stud	Steel alloy	Electroless nickel plated
12	Piston gasket	NBR	150 to 400
13	Piston seal	NBR	
14	Rod seal	NBR	
15	Tube gasket	NBR	
16	Gasket	NBR	300 and 400 only
17	Gasket	NBR	300 and 400 only
18	Super low head cap bolt	Carbon steel	300 and 400 only
19	Magnet	—	

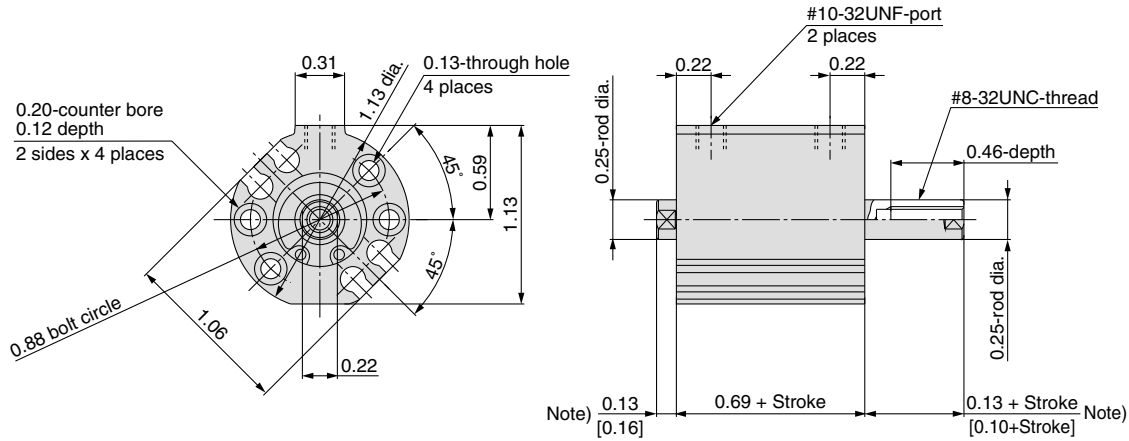
Repair Parts: Standard Seal Kit for Double Acting, Double Rod

Bore size	Kit no.	Remarks
056(9/16")	NCQ8WB056-PS	Piston seal, rod seal and tube gasket are included.
075(3/4")	NCQ8WB075-PS	
106(1 1/16")	NCQ8WB106-PS	
150(1 1/2")	NCQ8WB150-PS	
200(2")	NCQ8WB200-PS	
250(2 1/2")	NCQ8WB250-PS	
300(3")	NCQ8WB300-PS	
400(4")	NCQ8WB400-PS	

Series NCQ8W

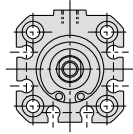
Dimensions/NCQ8WB056 to 400 [Without Auto switch]

056(9/16")

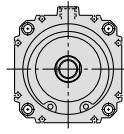


Note) With rubber bumper type, the stroke is reduced by 0.06" and the rod extension is 0.16".

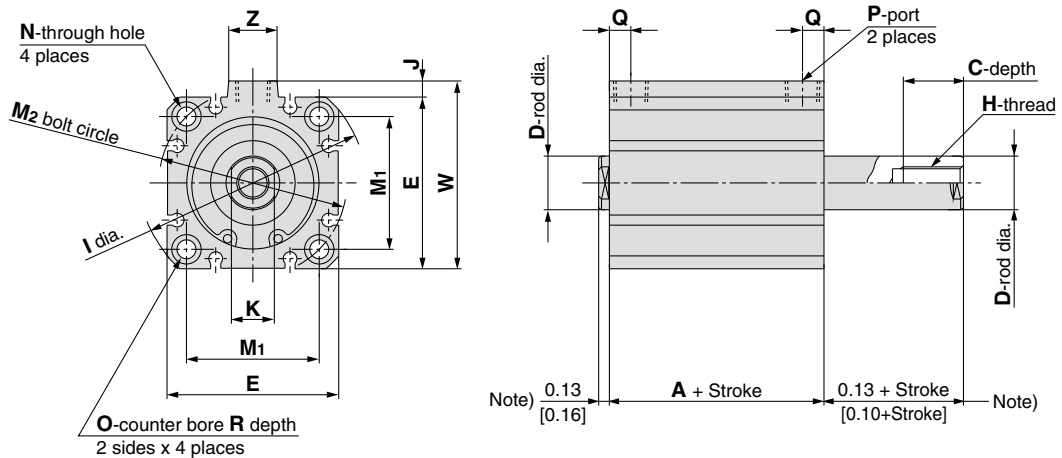
075(3/4"), 106(1 1/16"), 150(1 1/2"), 200(2"), 250(2 1/2"), 300(3"), 400(4")



For 075, 106



For 300, 400



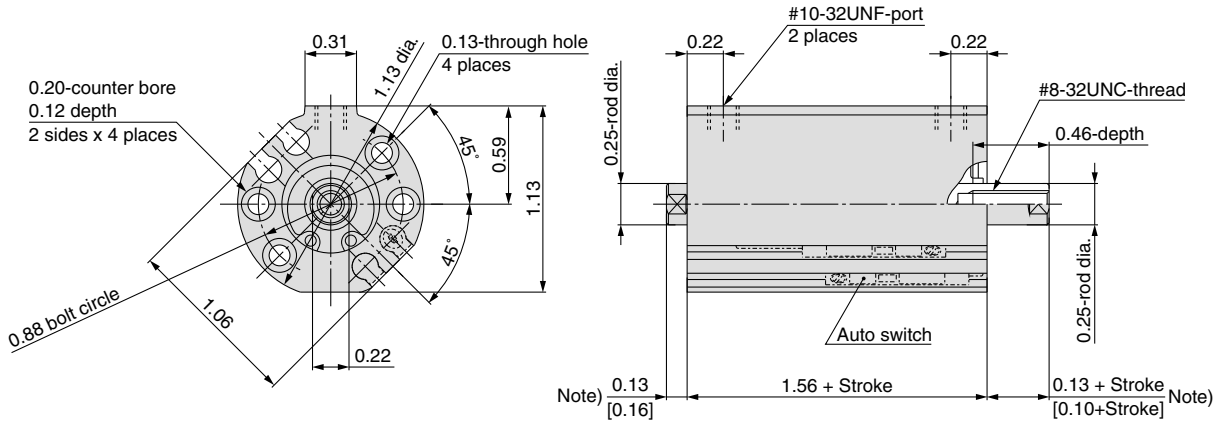
Symbol Bore	A	C	D	E	H	I	J	K	M ₁	M ₂	N	O	P	Q	R	W	Z
075(3/4")	0.69	0.46	0.31	1.25	#10-32UNF	1.56	0.06	0.25	0.86	1.22	0.15	0.25	#10-32UNF	0.22	0.15	1.31	0.38
106(1 1/16")	0.94	0.70	0.50	1.56	5/16-24UNF	2.03	0.16	0.44	1.19	1.69	0.15	0.25	NPT1/8	0.25	0.15	1.72	0.56
150(1 1/2")	1.00	0.70	0.63	2.00	3/8-24UNF	2.63	0.19	0.50	1.55	2.19	0.22	0.34	NPT1/8	0.25	0.20	2.19	0.56
200(2")	1.06	0.70	0.75	2.53	1/2-20UNF	3.13	0.20	0.63	1.90	2.69	0.22	0.34	NPT1/8	0.28	0.20	2.73	0.56
250(2 1/2")	1.31	0.70	0.75	2.84	1/2-20UNF	3.75	0.39	0.63	2.30	3.25	0.28	0.41	NPT1/4	0.33	0.26	3.23	0.69
300(3")	1.38	0.73	0.88	3.56	5/8-18UNF	4.25	0.28	0.75	2.67	3.78	0.28	0.41	NPT1/4	0.37	0.26	3.84	0.68
400(4")	1.69	0.80	1.00	4.56	3/4-16UNF	5.50	0.41	0.88	3.49	4.94	0.34	0.50	NPT3/8	0.46	0.33	4.97	1.00

Note) With rubber bumper type, the stroke is reduced by 0.06" and the rod extension is 0.16".

Compact Cylinder Double Acting, Double Rod *Series NCQ8W*

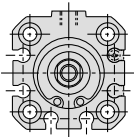
Dimensions/NCDQ8WB056 to 400 [With Auto switch]

056(9/16")

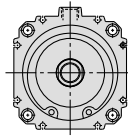


Note) With rubber bumper type, the stroke is reduced by 0.06" and the rod extension is 0.16".

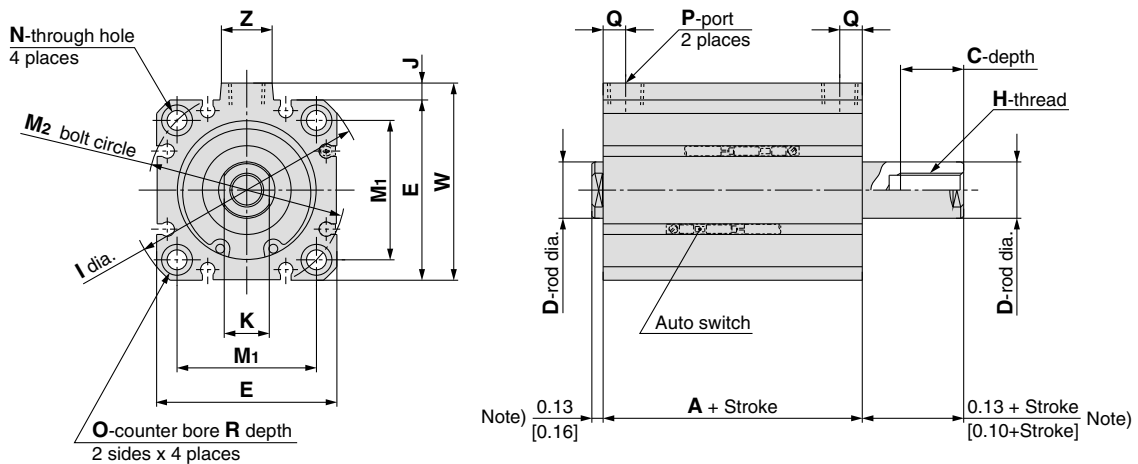
075(3/4"), 106(1 1/16"), 150(1 1/2"), 200(2"), 250(2 1/2"), 300(3"), 400(4")



For 075, 106



For 300, 400



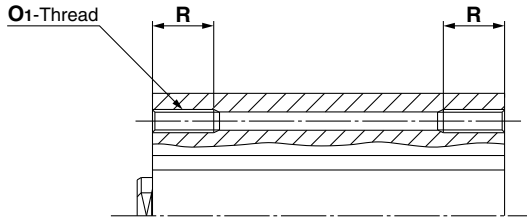
Symbol Bore	A	C	D	E	H	I	J	K	M ₁	M ₂	N	O	P	Q	R	W	Z
075(3/4")	1.56	0.46	0.31	1.25	#10-32UNF	1.56	0.06	0.25	0.86	1.22	0.15	0.25	#10-32UNF	0.22	0.15	1.31	0.38
106(1 1/16")	1.81	0.70	0.50	1.56	5/16-24UNF	2.03	0.16	0.44	1.19	1.69	0.15	0.25	NPT1/8	0.25	0.15	1.72	0.56
150(1 1/2")	1.88	0.70	0.63	2.00	3/8-24UNF	2.63	0.19	0.50	1.55	2.19	0.22	0.34	NPT1/8	0.25	0.20	2.19	0.56
200(2")	1.94	0.70	0.75	2.53	1/2-20UNF	3.13	0.20	0.63	1.90	2.69	0.22	0.34	NPT1/8	0.28	0.20	2.73	0.56
250(2 1/2")	2.19	0.70	0.75	2.84	1/2-20UNF	3.75	0.39	0.63	2.30	3.25	0.28	0.41	NPT1/4	0.33	0.26	3.23	0.69
300(3")	2.26	0.73	0.88	3.56	5/8-18UNF	4.25	0.28	0.75	2.67	3.78	0.28	0.41	NPT1/4	0.37	0.26	3.84	0.68
400(4")	2.57	0.80	1.00	4.56	3/4-16UNF	5.50	0.41	0.88	3.49	4.94	0.34	0.50	NPT3/8	0.46	0.33	4.97	1.00

Note) With rubber bumper type, the stroke is reduced by 0.06" and the rod extension is 0.16".

Series NCQ8W

Dimensions/NC(D)Q8W

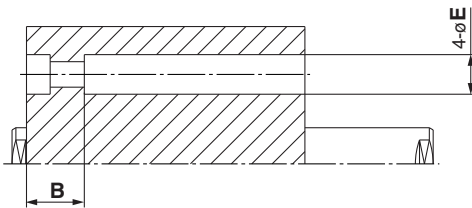
Both ends tapped NC(D)Q8WA-(C)(M)



Symbol	O1	R
Bore		
056(9/16")	#4-40UNC	0.34
075(3/4")	#6-32UNC	0.34
106(1 1/16")	#6-32UNC	0.50
150(1 1/2")	#10-24UNC	0.50
200(2")	#10-24UNC	0.53
250(2 1/2")	1/4-20UNC	0.65
300(3")	1/4-20UNC	0.69
400(4")	5/16-18UNC	0.84

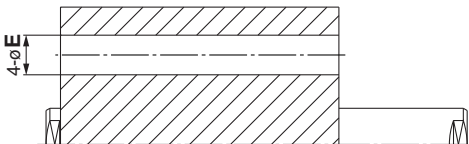
Note) Fully threaded tap for O12 stroke

Screw clearance hole front mount/NC(D)Q8WE



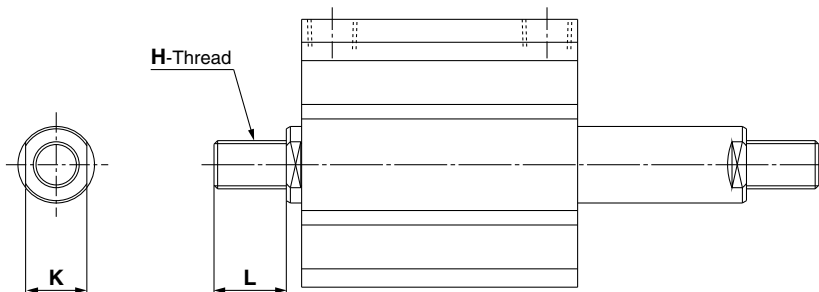
Symbol	B	E
Bore		
056(9/16")	0.34	0.20
075(3/4")	0.34	0.25
106(1 1/16")	0.50	0.25
150(1 1/2")	0.50	0.34
200(2")	0.53	0.34
250(2 1/2")	0.66	0.41
300(3")	0.69	0.41
400(4")	0.84	0.50

Screw clearance hole rear mount/NC(D)Q8WN



Dimensions/Male rod end

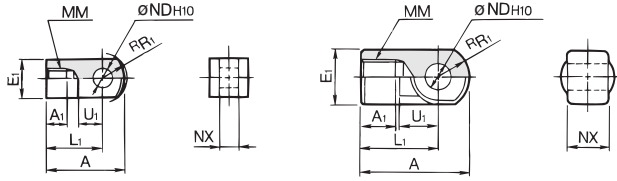
Male rod end NC(D)Q8W-(C)M



Symbol	H	L	K
Bore			
056(9/16")	#8-32UNC	0.38	0.22
075(3/4")	#10-32UNF	0.38	0.25
106(1 1/16")	5/16-24UNF	0.50	0.44
150(1 1/2")	3/8-24UNF	0.50	0.50
200(2")	1/2-20UNF	0.63	0.63
250(2 1/2")	1/2-20UNF	0.63	0.63
300(3")	5/8-18UNF	0.75	0.75
400(4")	3/4-16UNF	0.75	0.88

Accessories

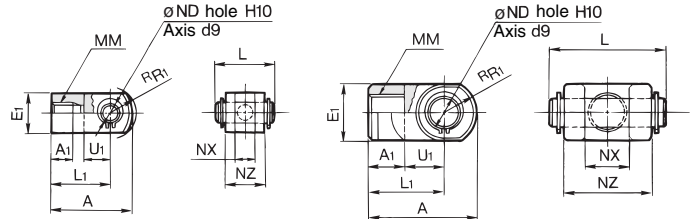
Single Rod Clevis(Rod eye)



RCS-015 Material: Carbon steel
RCS-03 Material: Cast iron

Part no.	Applicable bore size	A	A ₁	E ₁	L ₁	MM	^R R ₁	U ₁	ND _{H10}	NX
RCS-015	056(9/16")	1.26	0.24	0.47	0.98	#8-32UNC	0.47	0.55	3/16 ^{+0.002} _{-0.012}	0.25 ^{+0.004} _{-0.012}
RCS-02	075(3/4")	1.34	0.24	0.63	0.98	#10-32UNF	0.41	0.45	5/16 ^{+0.002} _{-0.012}	0.31 ^{+0.008} _{-0.012}
RCS-03	106(1 1/16")	1.65	0.63	0.87	1.18	5/16-24UNF	0.47	0.55	3/8 ^{+0.002} _{-0.026}	0.71 ^{+0.012} _{-0.026}
RCS-04	150(1 1/2")	1.65	0.63	0.87	1.18	3/8-24UNF	0.47	0.55	3/8 ^{+0.002} _{-0.026}	0.71 ^{+0.012} _{-0.026}
RCS-05	200(2"), 250(2 1/2")	2.20	0.71	1.10	1.57	1/2-20UNF	0.63	0.79	1/2 ^{+0.002} _{-0.012}	0.87 ^{+0.012} _{-0.026}
RCS-08	300(3")	2.80	0.82	1.50	1.97	5/8-18UNF	0.83	1.06	3/4 ^{+0.002} _{-0.026}	1.10 ^{+0.012} _{-0.026}
RCS-10	400(4")	3.11	0.82	1.73	2.17	3/4-16UNF	0.94	1.22	7/8 ^{+0.002} _{-0.012}	1.26 ^{+0.012} _{-0.026}

Double Rod Clevis(Rod eye)

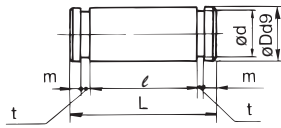


RCD-015 Material: Carbon steel
RCD-03 Material: Cast iron

Part no.	Applicable bore size	A	A ₁	E ₁	L ₁	MM	^R R ₁	U ₁	ND _{H10}	NX	NZ	L
RCD-015	056(9/16")	1.10	0.24	0.47	0.83	#8-32UNC	0.47	0.39	3/16 ^{+0.002} _{-0.012}	0.26 ^{+0.008} _{-0.012}	0.47	0.63
RCD-02	075(3/4")	1.34	0.24	0.63	0.98	#10-32UNF	0.41	0.45	5/16 ^{+0.002} _{-0.012}	0.31 ^{+0.008} _{-0.012}	0.63	0.83
RCD-03	106(1 1/16")	1.65	0.63	0.87	1.18	5/16-24UNF	0.47	0.55	3/8 ^{+0.002} _{-0.026}	0.71 ^{+0.012} _{-0.026}	1.42	1.61
RCD-04	150(1 1/2")	1.65	0.63	0.87	1.18	3/8-24UNF	0.47	0.55	3/8 ^{+0.002} _{-0.026}	0.71 ^{+0.012} _{-0.026}	1.42	1.61
RCD-05	200(2"), 250(2 1/2")	2.20	0.79	1.10	1.57	1/2-20UNF	0.63	0.79	1/2 ^{+0.002} _{-0.012}	0.87 ^{+0.012} _{-0.026}	1.73	1.97
RCD-08	300(3")	2.80	0.91	1.50	1.97	5/8-18UNF	0.83	1.06	3/4 ^{+0.002} _{-0.026}	1.10 ^{+0.012} _{-0.026}	2.20	2.52
RCD-10	400(4")	3.11	0.95	1.73	2.17	3/4-16UNF	0.94	1.22	7/8 ^{+0.002} _{-0.012}	1.26 ^{+0.012} _{-0.026}	2.52	2.83

* Clevis Pin and Snap rings not Included.

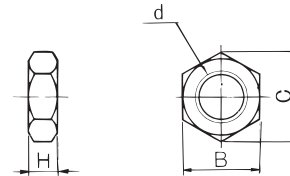
Double Rod Clevis Pin



Material: Carbon steel

Part no.	Applicable bore size	Dd9	L	d	ℓ	m	t
PS-015	056(9/16")	3/16 ^{-0.000} _{-0.000}	0.63	0.175	0.48	0.057	0.018
PS-02	075(3/4")	5/16 ^{-0.000} _{-0.000}	0.827	0.29	0.64	0.065	0.029
PS-03	106(1 1/16"), 150(1 1/2")	3/8 ^{-0.000} _{-0.000}	1.614	0.352	1.43	0.065	0.029
PS-05	200(2"), 250(2 1/2")	1/2 ^{-0.000} _{-0.000}	1.969	0.468	1.74	0.075	0.039
PS-08	300(3")	3/4	2.52	0.70	2.21	0.102	0.046
PS-10	400(4")	7/8	2.83	0.82	2.53	0.102	0.046

Jam Nut



Material: Carbon steel

Part no.	Applicable bore size	d	H	B	C
JM-01	056(9/16")	#8-32UNC	0.13	0.34	0.39
JM-02	075(3/4")	#10-32UNF	0.13	0.37	0.43
JM-03	106(1 1/16")	5/16-24UNF	0.19	0.50	0.58
JM-04	150(1 1/2")	3/8-24UNF	0.22	0.56	0.65
JM-05	200(2"), 250(2 1/2")	1/2-20UNF	0.31	0.75	0.87
JM-08	300(3")	5/8-18UNF	0.39	0.94	1.08
JM-10	400(4")	3/4-16UNF	0.45	1.13	1.30

Kits

Single Rod Clevis(Rod eye)

Kit no.	Applicable bore size	Including		
		Clevis (1)	Pin (1)	Snap rings (2)
RCSK-015	056(9/16")	RCS-015	PS-015	PC-01
RCSK-02	075(3/4")	RCS-02	PS-02	PC-02
RCSK-03	106(1 1/16")	RCS-03	PS-03	PC-03
RCSK-04	150(1 1/2")	RCS-04	PS-03	PC-03
RCSK-05	200(2"), 250(2 1/2")	RCS-05	PS-05	PC-05
RCSK-08	300(3")	RCS-08	PS-08	PC-08
RCSK-10	400(4")	RCS-10	PS-10	PC-10

Rod Clevis Pin

Kit no.	Applicable bore size	Including	
		Pin (1)	Snap rings (2)
PRA-015	056(9/16")	PS-015	PC-01
PRA-02	075(3/4")	PS-02	PC-02
PRA-03	106(1 1/16"), 150(1 1/2")	PS-03	PC-03
PRA-05	200(2"), 250(2 1/2")	PS-05	PC-05
PRA-08	300(3")	PS-08	PC-08
PRA-10	400(4")	PS-10	PC-10

Double Rod Clevis(Rod eye)

Kit no.	Applicable bore size	Including		
		Clevis (1)	Pin (1)	Snap rings (2)
RCDK-015	056(9/16")	RCD-015	PS-015	PC-01
RCDK-02	075(3/4")	RCD-02	PS-02	PC-02
RCDK-03	106(1 1/16")	RCD-03	PS-03	PC-03
RCDK-04	150(1 1/2")	RCD-04	PS-03	PC-03
RCDK-05	200(2"), 250(2 1/2")	RCD-05	PS-05	PC-05
RCDK-08	300(3")	RCD-08	PS-08	PC-08
RCDK-10	400(4")	RCD-10	PS-10	PC-10

Series NCQ8

Made to Order Specifications

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



-XC4: With heavy duty scraper

It is suitable for using cylinders under the environment, where there are much dusts in a surrounding area by using a heavy duty scraper on the wiper ring.

How to Order

Standard model no. **-XC4**

● With heavy duty scraper

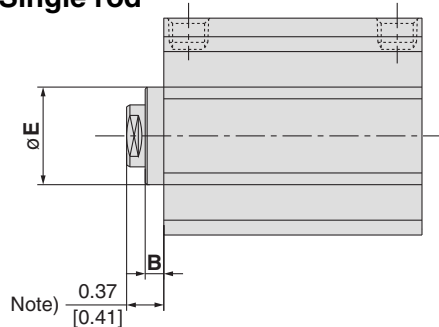


Note) The minimum operating pressure is the same as for standard products.

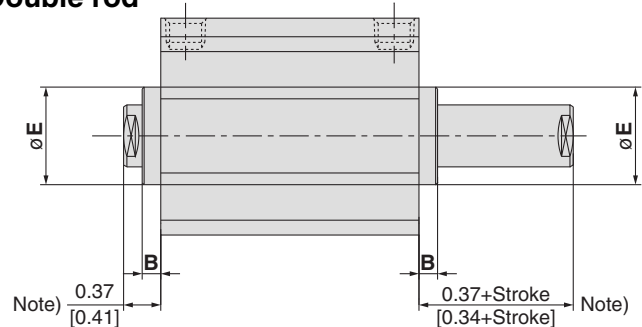
⚠ Caution

Other dimensions are the same as NCQ8/standard type.
Not available for single acting type.

Single rod



Double rod



Bore size	B	E
056(9/16")	0.11	0.44
075(3/4")	0.18	0.62
106(1 1/16")	0.17	0.83
150(1 1/2")	0.19	0.98
200(2")	0.19	1.13
250(2 1/2")	0.19	1.13
300(3")	0.19	1.38
400(4")	0.19	1.50

Note) According to the rubber bumper type, its stroke is reduced by 0.06", and the projection of a piston rod is 0.41" [0.34"+Stroke].

-XB6: Heat resistant (15 to 300°F)

Air cylinder which changed the seal material and grease, so that it could be used even at higher temperature up to 150°C.

How to Order

Standard model no. **-XB6**

Heat resistant ●

Specifications

Ambient temperature range	15 to 300°F (-10 to 150°C)
Seals material	Fluoro rubber
Grease	Heat resistant grease
Additional specifications Dimensions	Same as standard type



- Note 1) Operate without lubrication from a pneumatic system lubricator.
 Note 2) Please contact SMC for details on the maintenance intervals for this cylinder, which differ from those of the standard cylinder.
 Note 3) Built-in magnet type is not available with this option. Please contact SMC, if those combination is needed. High temp., auto switch may be applicable to certain case.
 Note 4) Piston speed is ranged from 2 to 20 in/sec.
 Note 5) With rubber bumper excluded.

⚠ Warning

Operating Precautions

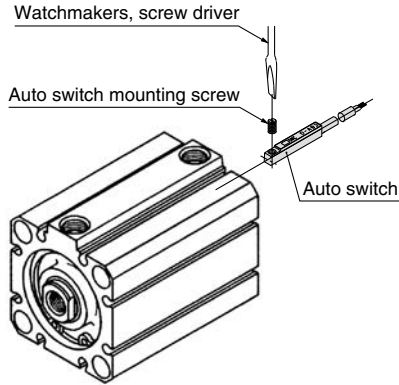
Be aware that smoking cigarettes, etc. after your hands have come into contact with the grease used in this cylinder can create a gas that is hazardous to humans.

Repair Parts: -XB6 Seal Kit

Bore size	Kit no.		Remarks
	NCQ8	NCQ8W	
056(9/16")	NCQ8B056-XB6-PS	NCQ8WB056-XB6-PS	Piston seal, rod seal, and tube gasket are included.
075(3/4")	NCQ8B075-XB6-PS	NCQ8WB075-XB6-PS	
106(1 1/16")	NCQ8B106-XB6-PS	NCQ8WB106-XB6-PS	
150(1 1/2")	NCQ8B150-XB6-PS	NCQ8WB150-XB6-PS	
200(2")	NCQ8B200-XB6-PS	NCQ8WB200-XB6-PS	
250(2 1/2")	NCQ8B250-XB6-PS	NCQ8WB250-XB6-PS	
300(3")	NCQ8B300-XB6-PS	NCQ8WB300-XB6-PS	
400(4")	NCQ8B400-XB6-PS	NCQ8WB400-XB6-PS	

Auto Switch Mounting

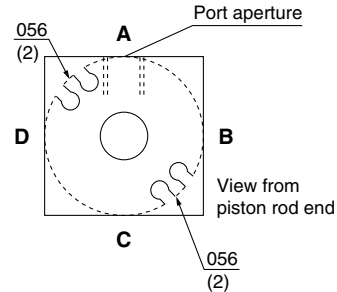
To mount auto switches, follow the instruction illustrated below.



- Use a watchmakers, screwdriver with a handle 0.2" to 0.24"(5 to 6 mm) in diameter when tightening the auto switch mounting screw. Tightening torque should be set 0.08 to 0.15 ft lbs.

The number of surfaces and grooves where an auto switch can be mounted (as direct mounting).

The number of the surfaces and grooves where the auto switch can be mounted, by switch type, are shown in the table below.



Switch type	D-A9□, M9□, M9□W			
	A (Mounting groove no.)	B (Mounting groove no.)	C (Mounting groove no.)	D (Mounting groove no.)
056(9/16")	Refer to the left.			
075(3/4")	—	○ (2)	○ (2)	○ (2)
106(1 1/16")	—	○ (2)	○ (2)	○ (2)
150(1 1/2")	○ (2)	○ (2)	○ (2)	○ (2)
200(2")	○ (2)	○ (2)	○ (2)	○ (2)
250(2 1/2")	○ (2)	○ (2)	○ (2)	○ (2)
300(3")	○ (2)	○ (2)	○ (2)	○ (2)
400(4")	○ (2)	○ (2)	○ (2)	○ (2)

Operating Range

Auto switch model	Bore size (in)							
	056	075	106	150	200	250	300	400
D-A9□(V)	0.30	0.30	0.35	0.35	0.35	0.41	0.52	0.46
D-M9□(V)	0.08	0.09	0.10	0.12	0.14	0.12	0.21	0.19
D-M9□W(V)	0.18	0.20	0.26	0.26	0.31	0.35	0.43	0.37
D-F9BAL	0.10	0.12	0.16	0.17	0.19	0.19	0.21	0.19

* The operating ranges are provided as guidelines including hystereses and are not guaranteed values (assuming approximately ±30% variations). They may vary significantly with ambient environments.

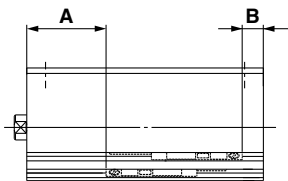
Minimum Auto Switch Mounting Stroke

Model	No. of auto switches	D-A9□	D-A9□V	D-M9□, D-M9□W	D-M9□V, D-M9□WV	D-F9BAL
NCDQ8A(B)□-□(C)(M)	1	0.62(5/8")	0.25(1/4")	0.62(5/8")	0.25(1/4")	1.00(1")
NCDQ8A(B)□-□□S(M)			0.37(3/8")			
NCDQ8A(B)W□-□(C)(M)	2	0.37(3/8")	0.25(1/4")	0.37(3/8")	0.25(1/4")	0.87(7/8")
NCDQ8A(B)Z□-□(M)			0.37(3/8")			

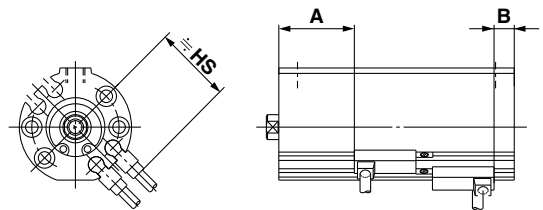
Series NCQ8

Auto Switches/Proper Mounting Positions and Height for Stroke End Detection

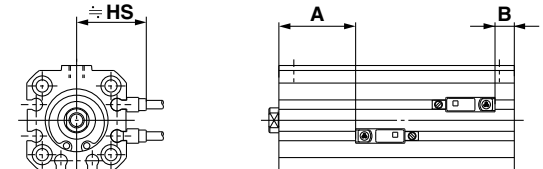
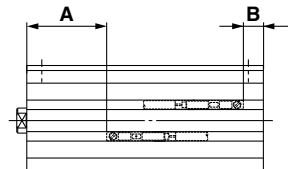
In-line
D-A9□
D-M9□
D-M9□W
056



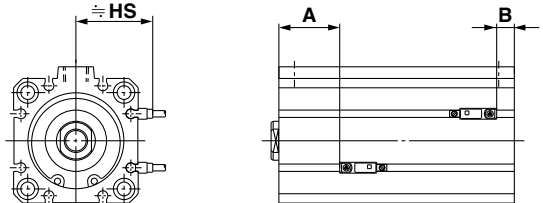
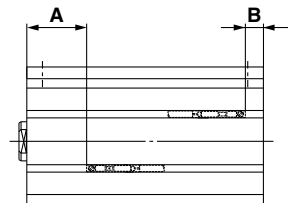
Perpendicular
D-A9□V
D-M9□V
D-M9□WV



075, 106



150, 200, 250,
300, 400



Note) Figures in the table below are references for auto switch mounting positions in the stroke end detection. In an actual setting, confirm the auto switch operating conditions, then adjust it.

NCDQ8A(B)□-□(C)(M) (in)

Bore size	D-A9□, D-A9□V			D-M9□(V), D-M9□W(V)			D-F9BAL		
	A	B	HS	A	B	HS	A	B	HS
056	0.61	0.04	0.71	0.77	0.2	0.79	0.73	0.16	0.69
075	0.55	0.08	0.81	0.71	0.24	0.89	0.67	0.2	0.79
106	0.85	0.12	0.96	1	0.28	1.04	0.96	0.24	0.94
150	0.83	0.12	1.18	0.98	0.28	1.26	0.94	0.24	1.16
200	0.81	0.2	1.45	0.96	0.35	1.52	0.93	0.31	1.43
250	0.98	0.28	1.6	1.14	0.43	1.68	1.1	0.39	1.58
300	0.96	0.34	1.94	1.12	0.5	2.03	1.08	0.46	1.94
400	1.12	0.53	2.44	1.28	0.69	2.54	1.24	0.65	2.44

NCDQ8A(B)□-□T(M) (025st to 100st) (in)

Bore size	D-A9□, D-A9□V			D-M9□(V), D-M9□W(V)			D-F9BAL		
	A	B	HS	A	B	HS	A	B	HS
056	0.24	0.41	0.71	0.39	0.57	0.79	0.35	0.53	0.69
075	0.55	0.59	0.81	0.71	0.75	0.89	0.67	0.71	0.79
106	0.85	0.61	0.96	1	0.77	1.04	0.96	0.73	0.94
150	0.83	0.63	1.18	0.98	0.79	1.26	0.94	0.75	1.16
200	0.81	0.69	1.45	0.96	0.85	1.52	0.93	0.81	1.43
250	0.98	1.02	1.6	1.14	1.18	1.68	1.1	1.14	1.58

NCDQ8A(B)□-□S(M) (025st to 100st) (in)

Bore size	D-A9□, D-A9□V			D-M9□(V), D-M9□W(V)			D-F9BAL		
	A	B	HS	A	B	HS	A	B	HS
056	0.59	0.04	0.71	0.75	0.2	0.79	0.71	0.16	0.69
075	0.81	0.08	0.81	0.96	0.24	0.89	0.93	0.2	0.79
106	0.83	0.12	0.96	0.98	0.28	1.04	0.94	0.24	0.94
150	0.83	0.12	1.18	0.98	0.28	1.26	0.94	0.24	1.16
200	0.81	0.2	1.45	0.96	0.35	1.52	0.93	0.31	1.43
250	0.98	0.28	1.6	1.14	0.43	1.68	1.1	0.39	1.58

NCDQ8A(B)□-□T(M) (125st to 200st) (in)

Bore size	D-A9□, D-A9□V			D-M9□(V), D-M9□W(V)			D-F9BAL		
	A	B	HS	A	B	HS	A	B	HS
056	0.24	0.98	0.71	0.39	1.14	0.79	0.35	1.1	0.69
075	0.55	1.14	0.81	0.71	1.3	0.89	0.67	1.26	0.79
106	0.85	1.24	0.96	1	1.4	1.04	0.96	1.36	0.94
150	0.83	1.26	1.18	0.98	1.42	1.26	0.94	1.38	1.16
200	0.81	1.32	1.45	0.96	1.48	1.52	0.93	1.44	1.43
250	0.98	1.89	1.6	1.14	2.05	1.68	1.1	2.01	1.58

NCDQ8A(B)□-□S(M) (125st to 200st) (in)

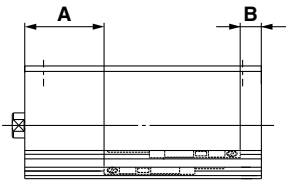
Bore size	D-A9□, D-A9□V			D-M9□(V), D-M9□W(V)			D-F9BAL		
	A	B	HS	A	B	HS	A	B	HS
056	1.16	0.04	0.71	1.32	0.2	0.79	1.28	0.16	0.69
075	1.38	0.08	0.81	1.54	0.24	0.89	1.5	0.2	0.79
106	1.46	0.12	0.96	1.61	0.28	1.04	1.57	0.24	0.94
150	1.44	0.12	1.18	1.59	0.28	1.26	1.56	0.24	1.16
200	1.44	0.2	1.45	1.59	0.35	1.52	1.56	0.31	1.43
250	1.85	0.28	1.6	2.01	0.43	1.68	1.97	0.39	1.58

NCDQ8A(B)W□-□(C)(M) (in)

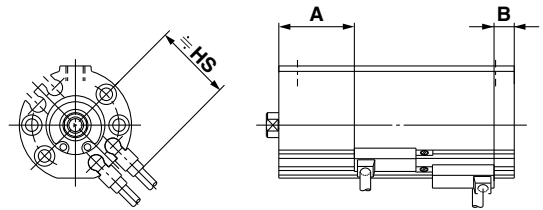
Bore size	D-A9□, D-A9□V			D-M9□(V), D-M9□W(V)			D-F9BAL		
	A	B	HS	A	B	HS	A	B	HS
056	0.69	0.1	0.71	0.85	0.26	0.79	0.81	0.22	0.69
075	0.63	0.16	0.81	0.79	0.31	0.89	0.75	0.28	0.79
106	0.51	0.51	0.96	0.67	0.67	1.04	0.63	0.63	0.94
150	0.55	0.55	1.18	0.71	0.71	1.26	0.67	0.67	1.16
200	0.57	0.57	1.45	0.73	0.73	1.52	0.69	0.69	1.43
250	0.69	0.69	1.6	0.85	0.85	1.68	0.81	0.81	1.58
300	0.9	0.57	1.94	1.06	0.73	2.03	1.02	0.69	1.94
400	1.03	0.76	2.44	1.18	0.91	2.54	1.14	0.88	2.44

Auto Switches/Proper Mounting Positions and Height for Stroke End Detection

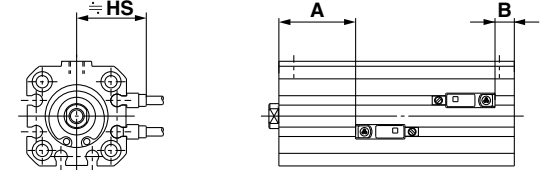
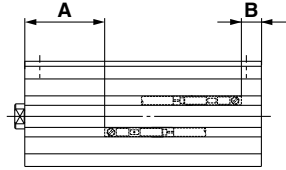
In-line
D-A9□
D-M9□
D-M9□W
056



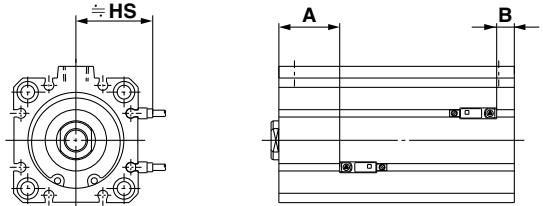
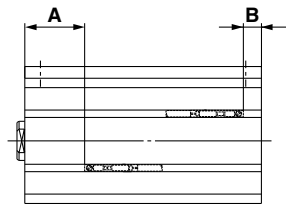
Perpendicular
D-A9□V
D-M9□V
D-M9□WV



075, 106



**150, 200, 250
300, 400**



Note) Figures in the table below are references for auto switch mounting positions in the stroke end detection. In an actual setting, confirm the auto switch operating conditions, then adjust it.

NCDQ8A(B)Z□-□(C)(M) (in)

Bore size	D-A9□, D-A9□V			D-M9□(V), D-M9□W(V)			D-F9BAL		
	A	B	HS	A	B	HS	A	B	HS
056	0.24	0.04	0.71	0.39	0.2	0.79	0.35	0.16	0.69
075	0.14	0.08	0.81	0.3	0.24	0.89	0.26	0.2	0.79
106	0.33	0.12	0.96	0.49	0.28	1.04	0.45	0.24	0.94
150	0.31	0.12	1.18	0.47	0.28	1.26	0.43	0.24	1.16
200	0.2	0.2	1.45	0.35	0.35	1.52	0.31	0.31	1.43
250	0.35	0.28	1.6	0.51	0.43	1.68	0.47	0.39	1.58
300	0.37	0.34	1.94	0.53	0.5	2.03	0.49	0.46	1.94
400	0.49	0.53	2.44	0.65	0.69	2.54	0.61	0.65	2.44

NCDQ8A(B)Z□-□T(M) (025st to 100st) (in)

Bore size	D-A9□, D-A9□V			D-M9□(V), D-M9□W(V)			D-F9BAL		
	A	B	HS	A	B	HS	A	B	HS
056	0.12	0.41	0.71	0.28	0.57	0.79	0.24	0.53	0.69
075	0.18	0.59	0.81	0.33	0.75	0.89	0.3	0.71	0.79
106	0.33	0.61	0.96	0.49	0.77	1.04	0.45	0.73	0.94
150	0.31	0.63	1.18	0.47	0.79	1.26	0.43	0.75	1.16
200	0.2	0.69	1.45	0.35	0.85	1.52	0.31	0.81	1.43
250	0.35	1.02	1.6	0.51	1.18	1.68	0.47	1.14	1.58

NCDQ8A(B)Z□-□S(M) (025st to 100st) (in)

Bore size	D-A9□, D-A9□V			D-M9□(V), D-M9□W(V)			D-F9BAL		
	A	B	HS	A	B	HS	A	B	HS
056	0.35	0.04	0.71	0.51	0.2	0.79	0.47	0.16	0.69
075	0.31	0.08	0.81	0.47	0.24	0.89	0.43	0.2	0.79
106	0.33	0.12	0.96	0.49	0.28	1.04	0.45	0.24	0.94
150	0.31	0.12	1.18	0.47	0.28	1.26	0.43	0.24	1.16
200	0.18	0.2	1.45	0.33	0.35	1.52	0.3	0.31	1.43
250	0.35	0.28	1.6	0.51	0.43	1.68	0.47	0.39	1.58

NCDQ8A(B)Z□-□T(M) (125st to 200st) (in)

Bore size	D-A9□, D-A9□V			D-M9□(V), D-M9□W(V)			D-F9BAL		
	A	B	HS	A	B	HS	A	B	HS
056	0.12	0.98	0.71	0.28	1.14	0.79	0.24	1.1	0.69
075	0.18	1.14	0.81	0.33	1.3	0.89	0.3	1.26	0.79
106	0.33	1.24	0.96	0.49	1.4	1.04	0.45	1.36	0.94
150	0.31	1.26	1.18	0.47	1.42	1.26	0.43	1.38	1.16
200	0.2	1.32	1.45	0.35	1.48	1.52	0.31	1.44	1.43
250	0.35	1.89	1.6	0.51	2.05	1.68	0.47	2.01	1.58

NCDQ8A(B)Z□-□S(M) (125st to 200st) (in)

Bore size	D-A9□, D-A9□V			D-M9□(V), D-M9□W(V)			D-F9BAL		
	A	B	HS	A	B	HS	A	B	HS
056	0.91	0.04	0.71	1.06	0.2	0.79	1.02	0.16	0.69
075	0.87	0.08	0.81	1.02	0.24	0.89	0.98	0.2	0.79
106	0.96	0.12	0.96	1.12	0.28	1.04	1.08	0.24	0.94
150	0.94	0.12	1.18	1.1	0.28	1.26	1.06	0.24	1.16
200	0.81	0.2	1.45	0.96	0.35	1.52	0.93	0.31	1.43
250	1.22	0.28	1.6	1.38	0.43	1.68	1.34	0.39	1.58

Series NCQ8

Auto Switch Specifications

Auto Switch Common Specifications

Type	Reed switches	Solid state switches
Leakage current	None	3-wire: 100 μ A or less, 2-wire: 0.8 mA or less
Operating time	1.2 ms	1 ms or less
Impact resistance	984 ft/s ²	3280 ft/s ²
Insulation resistance	50 M Ω or more at 500 VDC (between lead wire and case)	
Withstand voltage	1500 VAC for 1 min. (between lead wire and case)	1000 VAC for 1 min. (between lead wire and case)
Ambient temperature	14 to 140°F (-10 to 60°C)	
Enclosure	IEC60529 standard IP67, watertight (JIS C 0920)	
Standard	Conforming to CE Standards	

Lead Wire Length

Lead wire length indication

(Example) **D-M9BW** **L**

Lead wire length

Nil	20 in (0.5 m)
M ^{Note 5)}	39 in (1 m)
L	118 in (3 m)
Z	197 in (5 m)

- Note 1) Lead wire length Z: 197 in applicable auto switches
 Reed switch: To be dealt with specially
 Solid state switch: All types are produced upon receipt of order.
- Note 2) The standard lead wire length of solid state switch with timer or with tight water 2-color display is 118" (3 m). (Not available 20" (0.5 m))
- Note 3) For solid state switches with flexible wire specification, add "-61" at the end of the lead wire length.
- Note 4) Robot cable is available as standard for D-M9□(V), D-M9□W(V).
- Note 5) 1m(M): D-M9□W only.
- Note 6) Lead wire tolerance

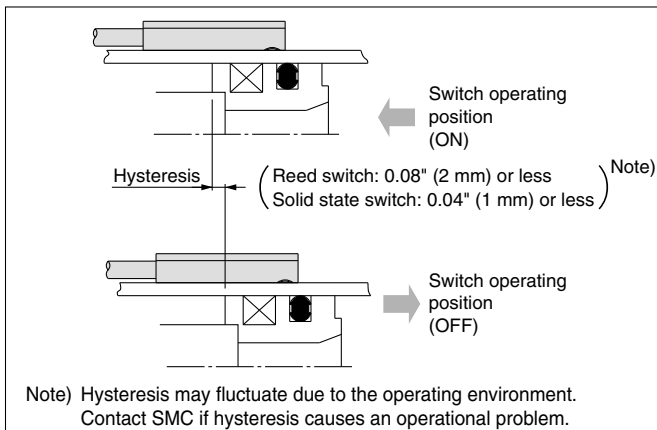
Lead wire length	Tolerance
20 in (0.5 m)	± 0.59 in (± 15 mm)
39 in (1 m)	± 1.18 in (± 30 mm)
118 in (3 m)	± 3.54 in (± 90 mm)
197 in (5 m)	± 5.91 in (± 150 mm)

(Example) **D-F9BAL-61**

Flexible specification

Auto Switch Hysteresis

Hysteresis is the distance between the position at which piston movement operates an auto switch to the position at which reverse movement turns the switch off. This hysteresis is included in part of the operating range (one side).



Contact Protection Box/CD-P11, CD-P12

Applicable switch type

D-A9 and D-A9□V type switches do not have internal contact protection circuits.

- ① The operated load is an induction load.
- ② The length of wiring to the load is 197" (5 m) or more.
- ③ The load voltage is 100 VAC.

A contact protection box should be used in any of the above situations. The lifetime of the contact may be shortened.

*There is no need to attach it to solid state auto switches.

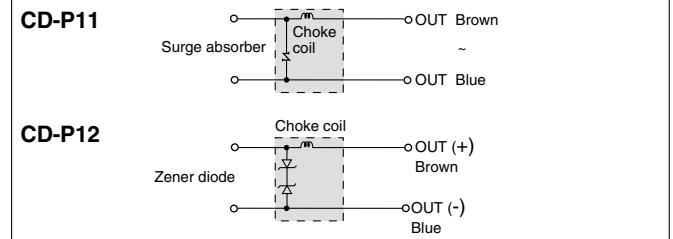
Specifications

Part No.	CD-P11	CD-P12	
Load voltage	100 VAC	200 VAC	24 VDC
Max. load current	25 mA	12.5 mA	50 mA

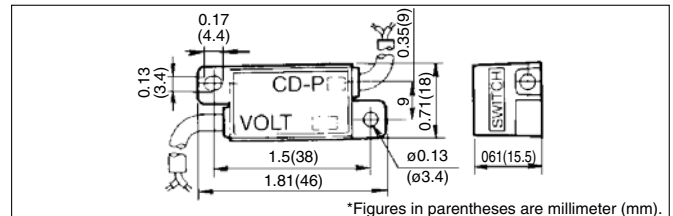
* Lead wire length — Switch connection side: 20" (0.5 m)
 Load connection side: 20" (0.5 m)



Internal Circuit



Dimensions



Contact Protection Box/Connection

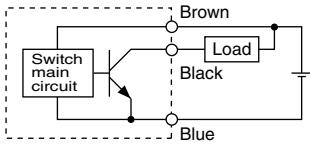
To connect a switch unit to a contact protection box, connect the lead wire from the side of the contact protection box marked SWITCH to the lead wire coming out of the switch unit. The switch unit should be kept as close as possible to the contact protection box with a lead wire that is no more than 39.37" (1 m) in length.

Series NCQ8

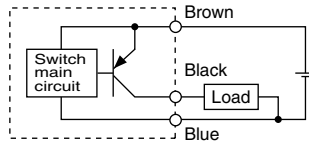
Auto Switch Connections and Examples

Basic Wiring

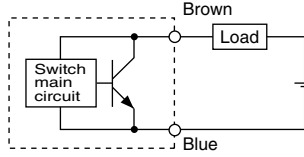
Solid state 3-wire, NPN



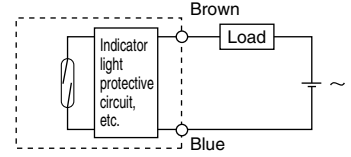
Solid state 3-wire, PNP



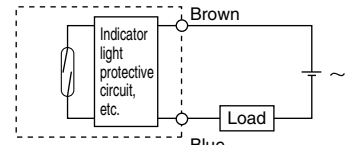
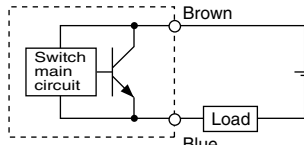
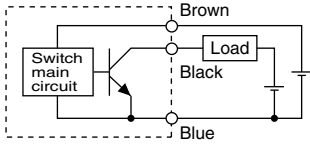
2-wire (Solid state switch)



2-wire (Reed switch)

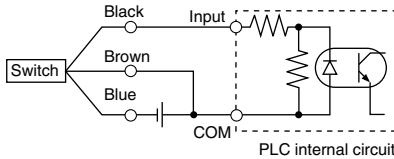


(Power supplies for switch and load are separate)

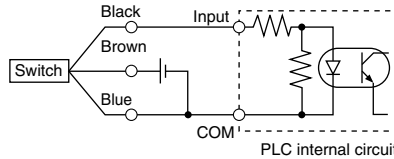


Examples of Connection to PLC (Programmable Logic Controller)

· Sink input specifications
3-wire, NPN

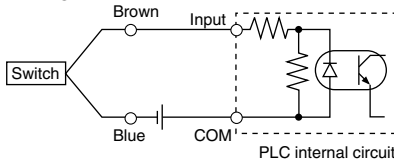


· Source input specifications
3-wire, PNP

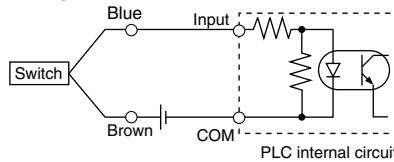


Connect according to the applicable PLC input specifications, as the connection method will vary depending on the PLC input specifications.

2-wire



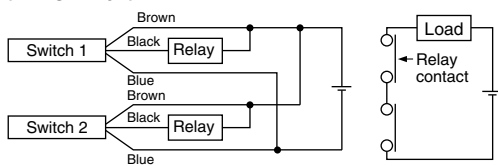
2-wire



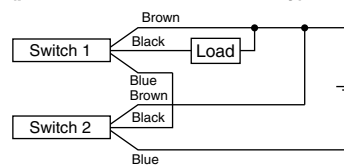
Connection Examples for AND (Series) and OR (Parallel)

· 3-wire (using relays)

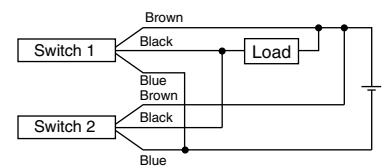
AND connection for NPN output (using relays)



AND connection for NPN output (performed with switches only)

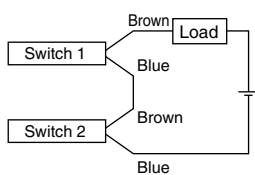


OR connection for NPN output



The indicator light illuminates when the two switches are in the ON state.

2-wire with 2-switch AND connection

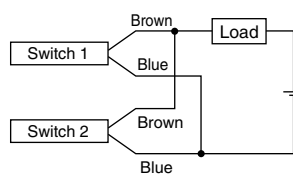


When two switches are connected in series, a load may malfunction because the load voltage will decline when in the ON state. The indicator lights will light when both switches are in the ON state.

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

Example: Power supply is 24 VDC
Internal voltage drop in switch is 4 V.

2-wire with 2-switch OR connection



< Solid State >

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

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.
Leakage current from switch is 1 mA.

< Reed Switch >

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

Reed Switch Direct Mounting Style

D-A90(V)/D-A93(V)/D-A96(V)



Grommet



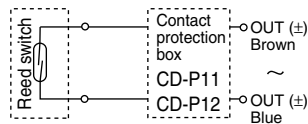
Caution

Operating Precautions

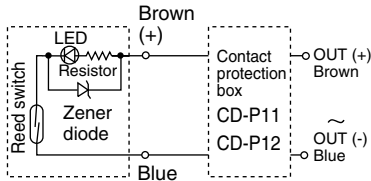
- Do not use anything other than the mounting screws attached to the auto switch body to secure the switch. If screws other than those specified are used, it may cause the switch to be damaged.

Auto Switch Internal Circuit

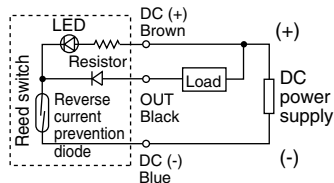
D-A90, A90V



D-A93, A93V



D-A96, A96V



- Note) 1. In the case operation load is an inductive load.
 2. In the case the wiring length to load is more than 197"(5 m).
 3. In the case the load voltage is 100 VAC.
 A contact protection box should be used if any of the above conditions is applicable. The lifetime of the contact may be shortened. (For detailed information about the contact protection box, please refer to page 40.)

Auto Switch Specification

PLC: Programable Logic Controller

D-A90, D-A90V (Without indicator light)				
Electrical entry direction	D-A90		D-A90V	
	In-line		Perpendicular	
Applicable load	IC circuit, Relay, PLC			
Load voltage	24 V _{DC} ^{AC} or less	48 V _{DC} ^{AC} or less	100 V _{DC} ^{AC} or less	
Maximum load current	50 mA	40 mA	20 mA	
Contact protection circuit	None			
Internal resistance	1 Ω or less (including lead wire length of 118"(3m))			
Standard	Conforming to CE Standards			
D-A93, D-A93V, D-A96, D-A96V (With indicator light)				
Auto switch model	D-A93	D-A93V	D-A96	D-A96V
Electrical entry direction	In-line	Perpendicular	In-line	Perpendicular
Applicable load	Relay, PLC		IC	
Load voltage	24 VDC	100 VAC	4 to 8 VDC	
Load current range and max. load current	5 to 40 mA	5 to 20 mA	20 mA	
Contact protection circuit	None			
Internal voltage drop	D-A93 — 2.4 V or less (to 20 mA)/ 3 V or less (to 40 mA)		D-A93V — 2.7 V or less	
Indicator light	Red LED lights up when ON			
Standard	Conforming to CE Standards			

Lead wires

- Oilproof vinyl heavy -duty cord, 0.11" (ø2.7mm), 20" (0.5 m)
- D-A90(V), D-A93(V) 2.8 x 10⁻⁴ in² (0.18 mm²) x 2 cores (Brown, Blue)
- D-A96(V) 2.3 x 10⁻⁴ in² (0.15 mm²) x 3 cores (Brown, Black, Blue)

Note 1) Refer to page 40 for auto switch common specifications.

Note 2) Refer to page 40 for lead wire lengths.

Note 3) Visibility of indicator light decreases under 5 mA, and may be hard to recognize under 2.5 mA. For over 1mA, there should be no problem for contact outputs.

Weight

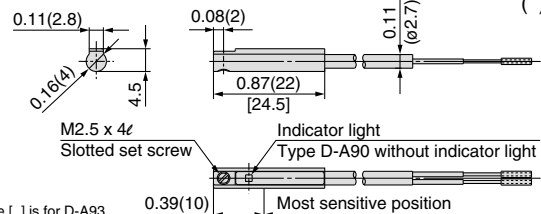
Unit: OZ, (): g

Model	D-A90(V)	D-A93(V)	D-A96(V)
Lead wire length 30 in(0.5 m)	0.21(6)	0.21(6)	0.28(8)
Lead wire length 118 in(3 m)	1.06(30)	1.06(30)	1.45(41)

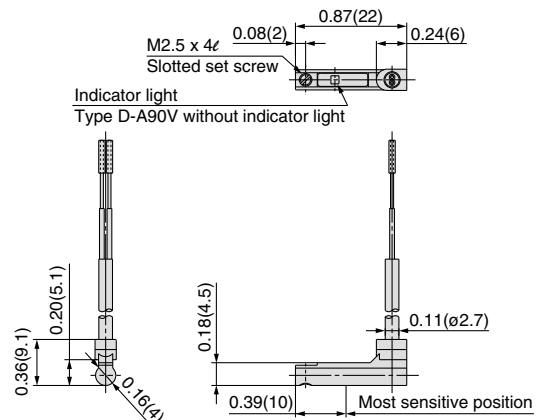
Dimensions

Unit: in

D-A90, D-A93, D-A96



D-A90V, D-A93V, D-A96V



Solid State Switch Direct Mounting Style

D-M9N(V)/D-M9P(V)/D-M9B(V)



Grommet

- 2-wire load current is reduced (2.5 to 40 mA)
- UL certified (style 2844) lead cable is used.
- Flexibility is 1.5 times greater than the conventional model (SMC comparison).
- Using flexible cable as standard spec.



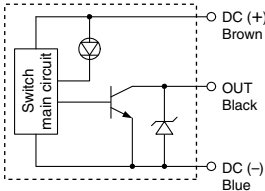
⚠ Caution

Operating Precautions

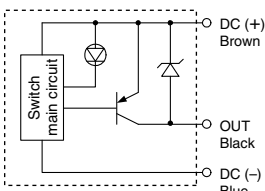
Fix the switch with the existing screw installed on the switch body. The switch may be damaged if a screw other than the one supplied, is used.

Auto Switch Internal Circuit

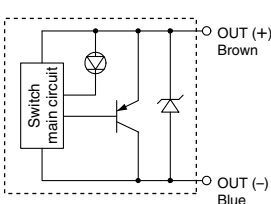
D-M9N, M9NV



D-M9P, M9PV



D-M9B, M9BV



Auto Switch Specifications

PLC: Abbreviation of Programmable Logic Controller

D-M9□, D-M9□V (With indicator light)						
Auto switch model	D-M9N	D-M9NV	D-M9P	D-M9PV	D-M9B	D-M9BV
Electrical entry direction	In-line	Perpendicular	In-line	Perpendicular	In-line	Perpendicular
Wiring type	3-wire				2-wire	
Output type	NPN		PNP		—	
Applicable load	IC circuit, Relay, PLC				24 VDC relay, PLC	
Power supply voltage	5, 12, 24 VDC (4.5 to 28 V)				—	
Current consumption	10 mA or less				—	
Load voltage	28 VDC or less		—		24 VDC (10 to 28 VDC)	
Load current	40 mA or less				2.5 to 40 mA	
Internal voltage drop	0.8 V or less				4 V or less	
Leakage current	100 μA or less at 24 VDC				0.8 mA or less	
Indicator light	Red LED lights when ON.					
Standard	Conforming to CE Standards					

- Lead wires — Oilproof vinyl heavy -duty cord
0.1"(2.7 mm) x 0.13"(3.2mm) ellipse, 2.3 x 10⁻⁴in²(0.15mm²), 2 cores: D-M9B(V), 3 cores: D-M9N(V), D-M9P(V)
Note 1) Refer to page 40 for solid state switch common specifications.
Note 2) Refer to page 40 for lead wire lengths.

Weight

Unit: OZ, (): g

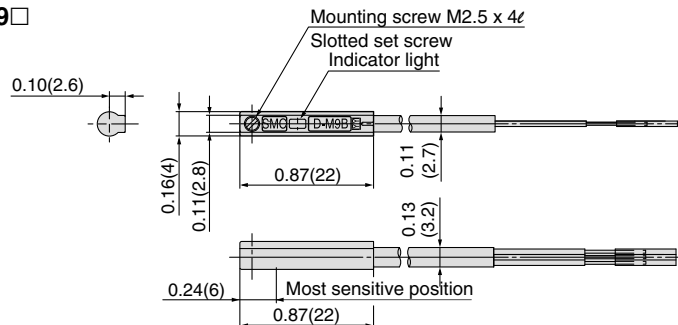
Auto switch model	D-M9N(V)	D-M9P(V)	D-M9B(V)
Lead wire length in(m)	20(0.5)	0.28(8)	0.25(7)
	118(3)	1.45(41)	1.34(38)
	197(5)	2.40(68)	2.22(63)

Dimensions

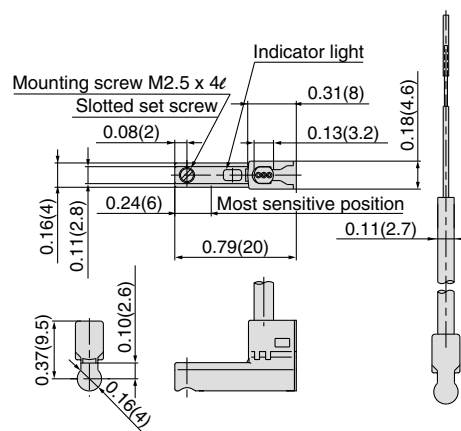
Unit: in

(): mm

D-M9□



D-M9□V



2-color Indication Type Solid State Switch Direct Mounting Style

D-M9NW(V)/D-M9PW(V)/D-M9BW(V)

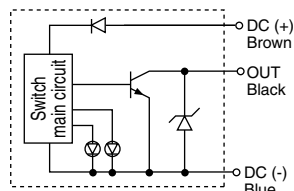
Grommet

- 2-wire load current is reduced (2.5 to 40 mA).
- UL certified (style 2844) lead wire cable is used.
- Flexibility is 1.5 times greater than the conventional model (SMC comparison).
- Using flexible cable as standard spec.
- The optimum operating position can be determined by the color of the light. (Red → Green → Red)

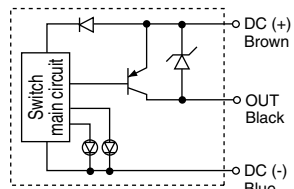


Auto Switch Internal Circuit

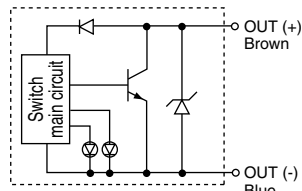
D-M9NW, M9NWV



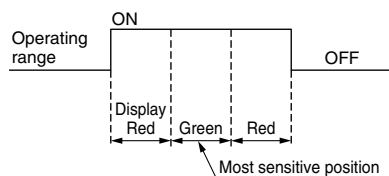
D-M9PW, M9PWV



D-M9BW, M9BWV



Indicator light



Auto Switch Specifications

PLC: Programable Logic Controller

D-M9□W, D-M9□WV (With indicator light)						
Auto switch model	D-M9NW	D-M9NWV	D-M9PW	D-M9PWV	D-M9BW	D-M9BWV
Electrical entry direction	In-line	Perpendicular	In-line	Perpendicular	In-line	Perpendicular
Wiring type	3-wire			2-wire		
Output type	NPN		PNP		—	
Applicable load	IC circuit, Relay, PLC				24 VDC relay, PLC	
Power supply voltage	5, 12, 24 VDC (4.5 to 28 V)					—
Current consumption	10 mA or less					—
Load voltage	28 VDC or less		—		24 VDC (10 to 28 VDC)	
Load current	40 mA or less				2.5 to 40 mA	
Internal voltage drop	0.8 V or less at 10 mA (2 V or less at 40 mA)				4 V or less	
Current leakage	100 μA or less at 24 VDC				0.8 mA or less	
Indicator light	Operating position Red LED illuminates. Optimum operating position Green LED illuminates.					
Standard	Conforming to CE Standards					

- Lead wires — Oilproof heavy-duty vinyl cable: $\phi 2.7 \times 3.2$ ellipse
 D-M9BW(V) $2.3 \times 10^{-4} \text{ in}^2 \times 2$ cores
 D-M9NW(V), D-M9PW(V) $2.3 \times 10^{-4} \text{ in}^2 \times 3$ cores
 Note 1) Refer to page 40 for solid state switch common specifications.
 Note 2) Refer to page 40 for lead wire lengths.

Weight

Unit: OZ, ():g

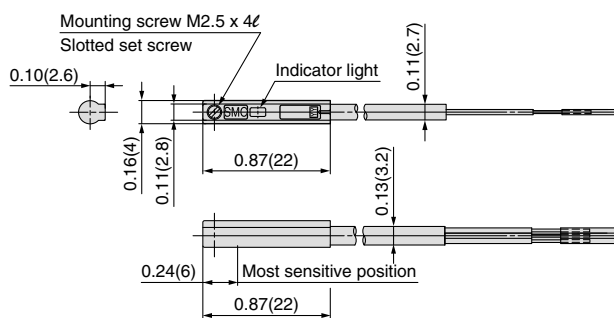
Model	D-M9NW(V)	D-M9PW(V)	D-M9BW(V)	
Lead wire length in(m)	20(0.5)	0.28(8)	0.28(8)	0.25(7)
	39(1)	0.55(14)	0.55(14)	0.51(13)
	118(3)	1.45(41)	1.45(41)	1.34(38)
	197(5)	2.40(68)	2.40(68)	2.22(63)

Dimensions

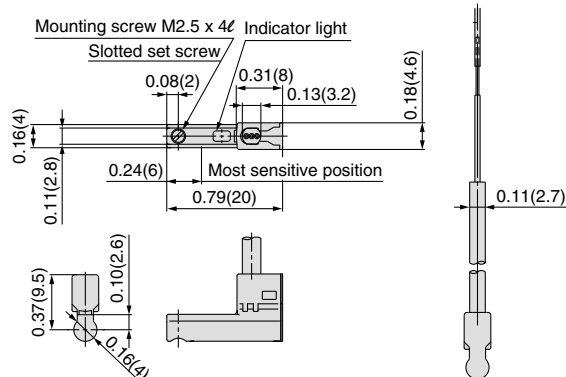
Unit: in

(): mm

D-M9□W



D-M9□WV



Water Resistant 2-color Indication Type Solid State Switch: Direct Mounting Style D-F9BAL



Grommet

Water (coolant) resistant type

- The optimum operating position can be determined by the color of the light. (Red --> Green --> Red)



⚠ Caution

Operating Precautions

- ① Please consult with SMC if using coolant liquid other than water based solution.
- ② Do not use anything other than the mounting screws attached to the auto switch body to secure the switch. If screws other than those specified are used, it may cause the switch to be damaged.

Auto Switch Specifications

PLC: Programable Logic Controller

D-F9BAL (With indicator light)	
Auto switch model	D-F9BAL
Wiring type	2-wire
Output type	—
Applicable load	24 VDC relay, PLC
Power supply voltage	—
Current consumption	—
Load voltage	24 VDC (10 to 28 VDC)
Load current	5 to 30 mA
Internal voltage drop	5 V or less
Leakage current	1 mA or less at 24 VDC
Indicator light	Actuated position Red LED lights up Optimum operating position Green LED lights up
Standard	Conforming to CE Standards

● Lead wires

Oilproof vinyl heavy -duty cord, 0.11" (ø2.7mm), 20" (0.5m)
2.8x 10⁻⁴in² (0.18 mm²) x 2 cores (Brown, Blue)

Note 1) Refer to page 40 for auto switch common specifications.

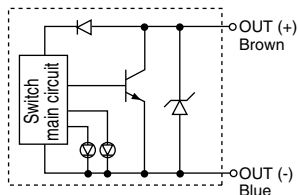
Note 2) Refer to page 40 for lead wire lengths.

Weight

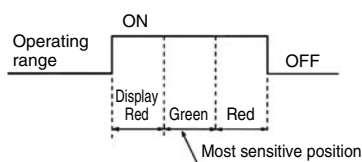
Unit: 1bs, () : g

Model		D-F9BA
Lead wire length in(m)	20(0.5)	—
	118(3)	1.37(37)
	197(5)	2.01(57)

Auto Switch Internal Circuit



Indicator light



Dimensions

Unit: in

() : mm

