

Model

Model		Bore size (mm)	Port size	Lubrication	Action	Standard stroke (mm)	Auto switch mounting	Cushion		
								Rubber	Air	
Relief type	10-/21-CDU6	6	M5 x 0.8	Non-lube	Double acting Single rod	5, 10, 15, 20, 25, 30	D	D	—	
	10-/21-CDU10	10								
	10-/21-CDU16	16								
	10-/21-CDU20	20								
	10-/21-CDU25	25								
10-/21-CDU32	32	5, 10, 15, 20, 25, 30, 40, 50								
Vacuum suction type	11-/22-CDU6					6				5, 10, 15, 20, 25, 30
	11-/22-CDU10					10				
	11-/22-CDU16					16				
	11-/22-CDU20					20				
	11-/22-CDU25	25								
11-/22-CDU32	32									

Suction Flow Rate of Vacuum Suction Type (Reference values)

Size	Suction flow rate L/min (ANR)
6	6
10	10
16/20/25/32	12

Specifications

Bore size (mm)	6	10/16	20/25/32
Item			
Proof pressure	1.05 MPa		
Maximum operating pressure	0.7 MPa		
Minimum operating pressure	0.12 MPa	0.06 MPa	0.05 MPa
Ambient and fluid temperature	Without auto switch : -10°C to 70°C With auto switch : -10°C to 60°C (No freezing)		
Piston speed	50 to 400mm/s		
Stroke length tolerance	+1.0 0		
Grease	10-/11-: Fluorine grease 21-/22-: Lithium soap based grease		
Cleanliness class (ISO class)	10-: Class 4, 21-: Class 5 11-/22-: Class 3		

Auto Switch Specifications

Type	Auto switch part no.	Load voltage	Load current range	Indicator light	Application
Reed auto switch	D-A93	24 VDC	5 to 40mA (24 VDC)	D	Relay, PLC
Solid state auto switch	2-wire D-M9B	28 VDC or less	40mA or less	D	IC circuit, Relay, PLC
	3-wire D-M9N	24 VDC (10 to 28 VDC)	5 to 40mA	D	24 VDC Relay, PLC

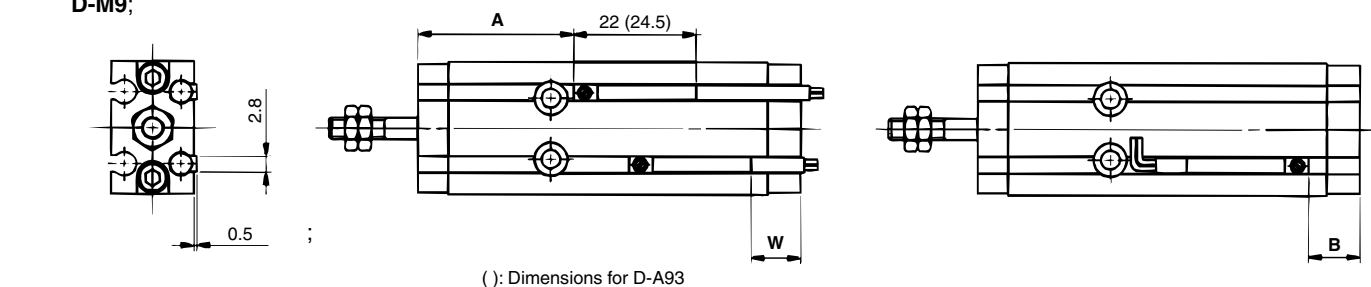
Refer to page 889 for the applicable auto switch list.

PLC: Programmable Logic Controller

Auto Switch Proper Mounting Position (Detection at Stroke End)

D-A9

D-M9;



Bore size (mm) ;	D-A9			D-M9;		
	A	B	W	A	B	W
6	29.5	5.5	-3.5 (-1)	33.5	9.5	0.5
10	29.5	9.5	-7.5 (-5)	33.5	13.5	-3.5
16	36	11.5	-9.5 (-7)	40	15.5	-5.5
20	41	15	-13 (-10.5)	45	19	-9
25	40.5	16.5	-14.5 (-12)	45.5	20.5	-10.5
32	43.5	18.5	-16.5 (-14)	47.5	22.5	-12.5

Note) The above mentioned values are indicated as a guide for auto switch mounting positions for stroke end detection. When actually mounting an auto switch, adjust the position after confirming the operating state of the auto switch.

Note 2) The negative values in the table indicate that the auto switch is mounted inside the cylinder body in case of W and outside in case of B.

Note 3) In case of 5 mm stroke (with 1 pc.) or 10 mm stroke (2 pcs.), the switch(es) may not go off or more than one switch may turn on simultaneously. Set them at 1 to 4 mm out of the values in the above table.

Note 4) (): Dimensions for D-A93.

⚠ Specific Product Precautions

Be sure to read this before handling.

Mounting

⚠ Caution

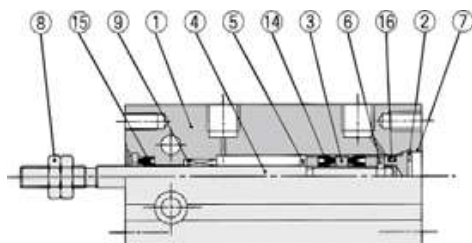
1. Observe the proper tightening torque in the right table in mounting.

Appropriate tightening torque

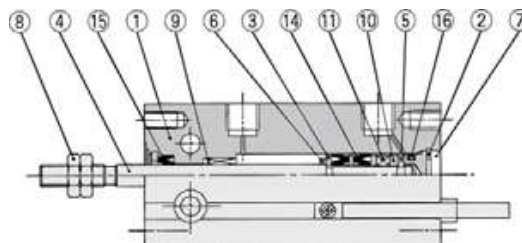
Bore size (mm)	Hexagon socket head cap screw size (mm)	Appropriate tightening torque (N·m)
ø6, ø10	M3	1.08 ±10%
ø16	M4	2.45 ±10%
ø20, ø25, ø32	M5	5.10 ±10%

Construction

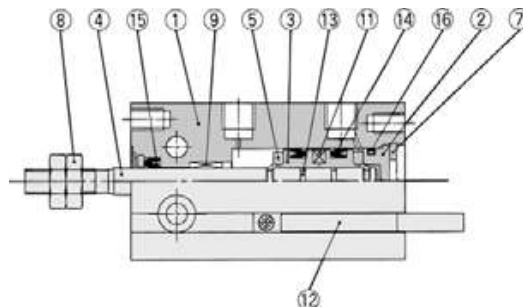
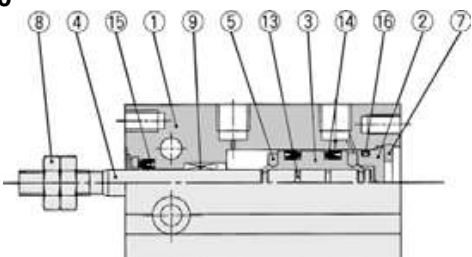
ø6



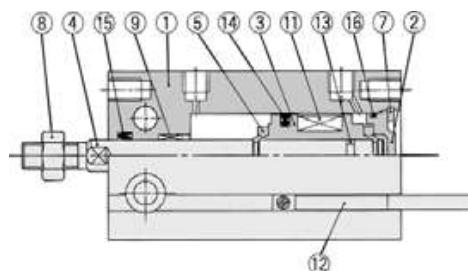
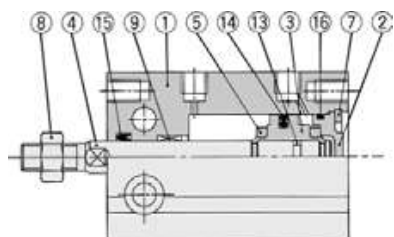
With auto switch



ø10



ø16 to ø32



Component Parts

No.	Description	Material	Note
1	Cylinder tube	Aluminum alloy	Hard anodized
2	Head cover	Brass	ø6 to ø10, Electroless nickel plated
3	Piston	Aluminum alloy	ø16 to ø32, Chromated
4	Piston rod	Brass	ø6
5	Bumper A	Aluminum alloy	ø10 to ø32, Chromated
6	Bumper B	Stainless steel	
7	Retaining ring	Urethane	
		Carbon tool steel	Phosphate coated

Component Parts

No.	Description	Material	Note
8	Rod end nut	Carbon steel	Chromated
9	Bushing	Bearing alloy	
10	Magnet holder	Brass	ø6
11	Magnet	—	
12	Auto switch	—	
13	Piston gasket	NBR	
14	Piston seal		
15	Rod seal		
16	Gasket		

Replacement Parts: Seal Kit

Bore size (mm)	Kit no.	Contents
10	CU10D-PS	Set of nos. above , , , ,
16	CU16D-PS	
20	CU20D-PS	
25	CU25D-PS	
32	CU32D-PS	

Seal kit includes , , . Order the seal kit, based on each bore size.

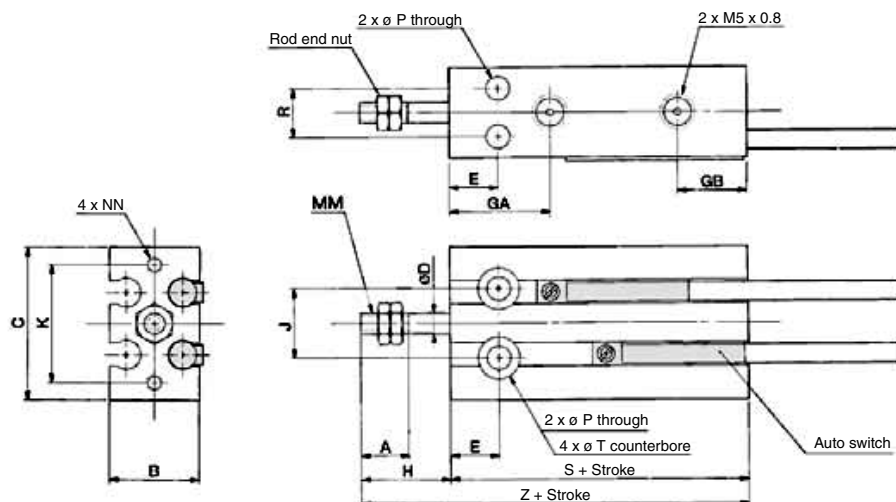
Seal kit includes a grease pack (10 g).

Order with the following part number when only the grease pack is needed.

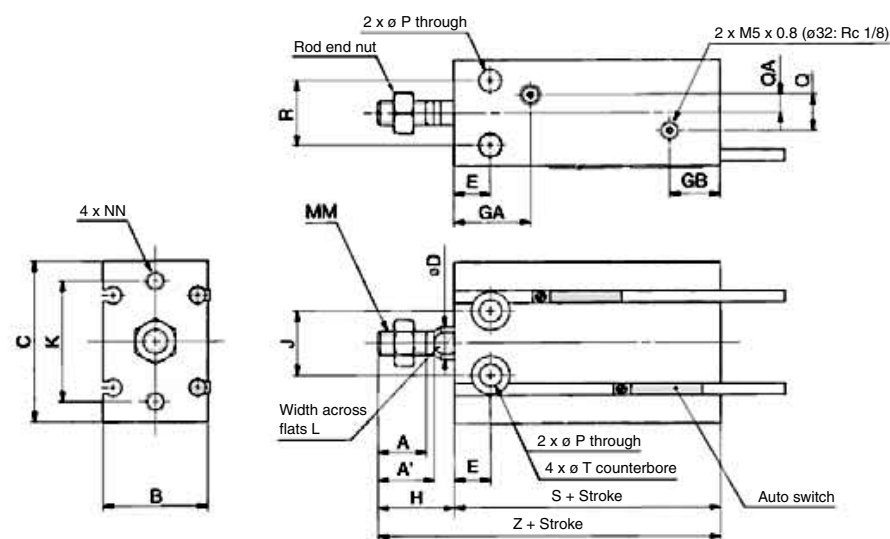
Grease pack part number: GR-S-010 (10 g)

Dimensions: Double Acting, Single Rod

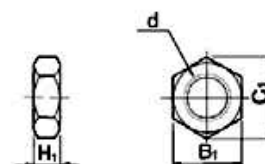
ø6, ø10



ø16 to ø32



Rod End Nut/Accessory



Material: Carbon steel

Part no.	Applicable bore size (mm)	d	H ₁	B ₁	C ₁
NTP-006	6	M3 x 0.5	1.8	5.5	6.4
NTP-010	10	M4 x 0.7	2.4	7	8.1
NTJ-015A	16	M5 x 0.8	4	8	9.2
NT-015A	20	M6 x 1.0	5	10	11.5
NT-02	25	M8 x 1.25	5	13	15.0
NT-03	32	M10 x 1.25	6	17	19.6

Bore size (mm)	A	A'	B	C	D	E	GA	GB	H	J	K	L	MM	NN	P	Q	QA
6	7	—	13	22	3	7	15	10	13	10	17	—	M3 x 0.5	M3 x 0.5 depth 5	3.2	—	—
10	10	—	15	24	4	7	16.5	10	16	11	18	—	M4 x 0.7	M3 x 0.5 depth 5	3.2	—	—
16	11	12.5	20	32	6	7	16.5 ^(note)	11.5	16	14	25	5	M5 x 0.8	M4 x 0.7 depth 6	4.5	4	2
20	12	14	26	40	8	9	19	12.5	19	16	30	6	M6 x 1.0	M5 x 0.8 depth 8	5.5	9	4.5
25	15.5	18	32	50	10	10	21.5	13	23	20	38	8	M8 x 1.25	M5 x 0.8 depth 8	5.5	9	4.5
32	19.5	22	40	62	12	11	23	12.5	27	24	48	10	M10 x 1.25	M6 x 1.0 depth 9	6.6	13.5	4.5

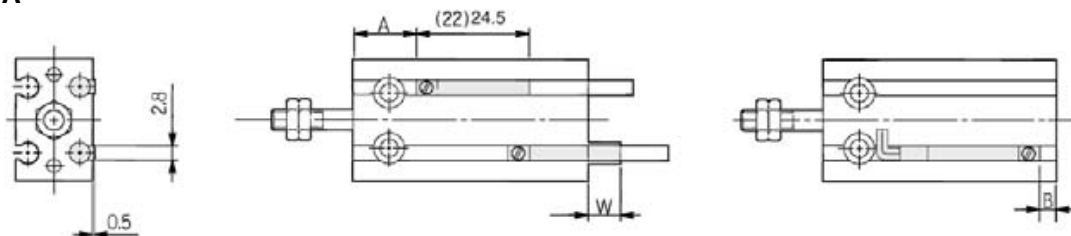
(mm)

Bore size (mm)	R	T	Without auto switch		With auto switch	
			S	Z	S	Z
6	7	6 depth 4.8	33	46	33	46
10	9	6 depth 5	36	52	36	52
16	12	7.6 depth 6.5	30	46	40	56
20	16	9.3 depth 8	36	55	46	65
25	20	9.3 depth 9	40	63	50	73
32	24	11 depth 11.5	42	69	52	79

Note) 5 stroke (CU16-5D): 14.5 mm

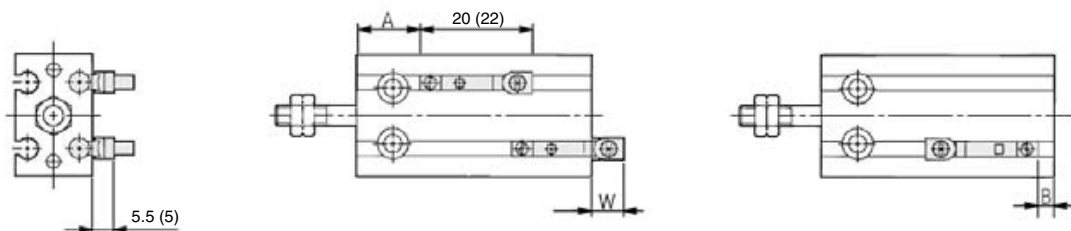
Proper Auto Switch Mounting Position (Detection at stroke end) and Its Mounting Height:

D-A9
D-M9:
D-M9: W
D-M9: A



() : Denotes the values of D-A96.

D-A9: V
D-M9: V
D-M9: WV
D-M9: AV



() : Denotes the values of D-A9: V.

(mm)

Bore size (mm)	D-A9□			D-A9□V			D-M9□, D-M9□V			D-M9□W, D-M9□WV			D-M9□A			D-M9□AV		
		B	W		B	W	A	B	W	A	B	W	A	B	W	A	B	W
6	13.5	-0.5	2.5 (5)	17.5	3.5	6.5	17.5	3.5	4.5	17.5	3.5	8.5	17.5	3.5	6.5			
10	12.5	3.5	-1.5 (1)	16.5	7.5	2.5	16.5	7.5	0.5	16.5	7.5	4.5	16.5	7.5	2.5			
16	16	4	-2 (0.5)	20	8	1.5	20	8	-0.5	20	8	3.5	20	8	1.5			
20	20	6	-4 (-1.5)	24	10	0	24	10	-2	24	10	2	24	10	0			
25	22.5	7	-5.5 (-3)	26.5	11	-1.5	26.5	11	-3.5	26.5	11	0.5	26.5	11	-1.5			
32 A	23.5	8.5	-6.5 (-4)	27.5	12.5	-2.5	27.5	12.5	-4.5	27.5	12.5	-0.5	27.5	12.5	-2.5			

Note 1) Figures in the table above are used as a reference when mounting the auto switches for stroke end detection. In the case of actually setting the auto switches, adjust them after confirming their operation.

Note 2) Negative figures in the table W indicate an auto switch is mounted inward from the edge of the cylinder body.

Note 3) In the case of the 5 stroke or the 10 stroke, there are times in which the auto switch will not turn OFF or 2 auto switches will turn ON simultaneously due to their movement range. Therefore, set the position approximately 1 to 4 mm outward from the values given in the table above. Then, perform an operation inspection to make sure that the auto switches operate normally (if 1 switch is used, make sure that it turns ON and OFF properly; if 2 auto switches are used, make sure that both auto switches turn ON).

Note 4) () in column W is the dimensions of D-A90 and A93.

Operating Range

(mm)

Auto switch model	Bore size					
	6	10	16	20	25	32
D-A9□, A9□V	5	6	9	11	12.5	14
D-M9□, M9□V						
D-M9□W, M9□WV	3	4	5.5	7	7	7.5
D-M9□A, M9□AV						

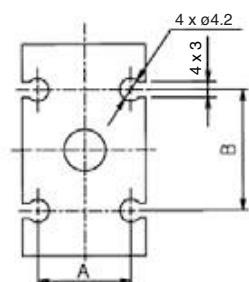
Since the operating range is provided as a guideline including hysteresis, it cannot be guaranteed (assuming approximately 30% dispersion). It may vary substantially depending on an ambient environment.

Minimum Stroke for Auto Switch Mounting

(mm)

No. of auto switches mounted	Applicable auto switch		
	D-A9: , D-A9: V	: D-M9 , D-M9: V	D-M9: W, D-M9: WV D-M9: A, D-M9: AV
1 pc.	5	5	5
2 pcs.	10	5	10

Auto Switch Groove Position



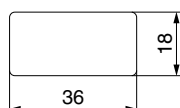
(mm)

Bore size (mm)	A	B
6	8.2	9
10	10.3	13
16	15	18
20	21	23
25	27	25
32	35	27

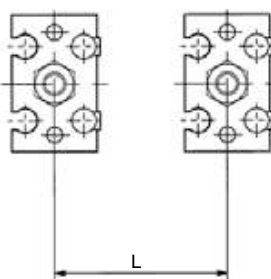
Caution on Proximity Installation

When free mounting cylinders equipped with auto switches are used, the auto switches could activate unintentionally if the installed distance is less than the dimensions shown in the table. Therefore, make sure to provide a greater clearance. Due to unavoidable circumstances, if they must be used with less distance than the dimensions given in the table, the cylinders must be shielded. Therefore, affix a steel plate or a magnetic shield plate (MU-S025) to the area on the cylinder that corresponds to the adjacent auto switch. (Please contact SMC for details.) Auto switches may malfunction if a shield plate is not used.

Dimensions of shield plate (MU-S025) that is sold separately are indicated as reference.



Material: Ferrite stainless steel, Thickness: 0.3 mm
The product can be attached to the cylinder since the bottom side is a seal type.



Bore size (mm)	Mounting pitch L (mm)
6	18
10	20
16	33
20	40
25	46
32	56