

# Free Mount Cylinder Series CU

Double Acting Single Rod/Double Rod  
Single Acting Spring Return/Extend, Non-rotating Rod  
ø6, ø10, ø16, ø20, ø25, ø32

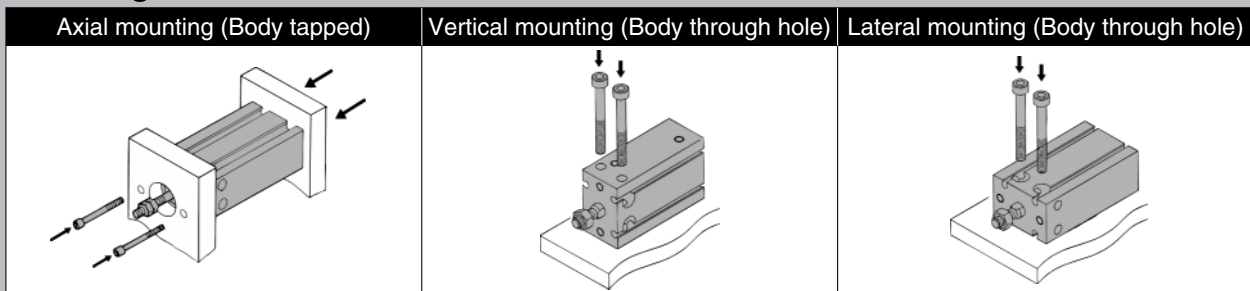
A space saving air cylinder with multiple surfaces for mounting.  
The series consist of an array of cylinders.

## Space savings




Having a square shape without a bracket, any of its surfaces can be used for mounting, thus enabling a space saving equipment layout.

## Auto switch attachable

### Mounting



### Variations

Series	Action	Rod	Basic	Standard variations		Bore size (mm)	Page
				Built-in magnet	Copper free		
<b>Standard/Series CU</b> 	Double acting	Single rod	•	•	•	6 10 16 20 25 32	2.1-11
		Double rod	•	•	•		2.1-17
	Single acting	Single rod (Spring return/extend)	•	•	•		2.1-22
		Double acting	Single rod	•	•		•
<b>Non-rotating rod/ Series CUK</b> 	Single acting	Double rod	•	•	•	2.1-35	
		Single rod (Spring return/extend)	•	•	•	2.1-39	
<b>Long Stroke Standard/Series CU</b> 	Double acting	Single rod	•	•	•	6 10 16 20 25 32	2.1-45
		Double acting	Single rod	•	•		•

CUJ

CU

CQS

CQ2

RQ

MU

### Applicable auto switch

Direct mounting	Reed switch	D-A9□/D-A9□V
	Solid state switch	D-F9□/D-F9□V D-F9□W/D-F9□WV

### Made to Order

Refer to p.5.4-1 for "Made to Order" of series CU.



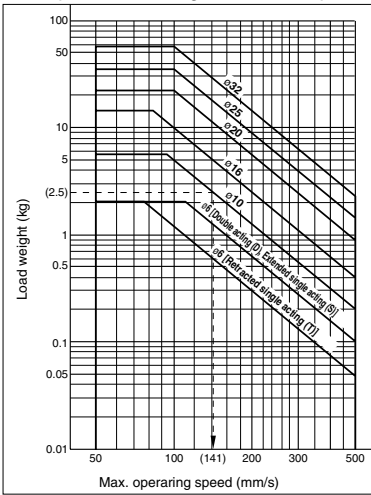
## Cautions

### ① Operating speed

Make sure to connect a speed controller to the cylinder and adjust its speed to 500mm/s or less.

If a load is to be attached to the end of the rod, adjust the speed to the maximum speed shown in Fig. 1 or less, in accordance with the added mass.

Graph 1: Load weight and max. speed



How to read graph

- Using the CU10 to drive a load weighing 2.5kg: From the vertical axis in the graph on the left, extend the horizontally from 2.5kg., and drop down from the point at which it intersects with the tube bore ø10. The maximum speed will be 141mm/s.

### ② Rod end allowable lateral load

Make sure that the lateral load that is applied to the rod end will be no more than the values shown in the tables.

The tables show the value for a single rod. For double rods, contact SMC.

#### Standard/Double acting single rod

Without auto switch: CU□-□D

(N)

Model	Stroke (mm)												
	5	10	15	20	25	30	40	50	60	70	80	90	100
CU6	0.085	0.075	0.068	0.061	0.056	0.052	0.045	0.039	0.035	-	-	-	-
CU10	0.34	0.30	0.27	0.25	0.23	0.21	0.18	0.16	0.15	-	-	-	-
CU16	0.69	0.61	0.55	0.50	0.46	0.43	0.37	0.33	0.29	-	-	-	-
CU20	2.2	2.0	1.8	1.6	1.5	1.4	1.2	1.1	1.0	0.92	0.85	0.78	0.73
CU25	3.5	3.2	3.0	2.7	2.6	2.4	2.1	1.9	1.7	1.6	1.4	1.3	1.2
CU32	5.4	4.9	4.6	4.3	4.0	3.8	3.3	3.0	2.8	2.5	2.3	2.2	2.0

With auto switch: CDU□-□D

(N)

Model	Stroke (mm)												
	5	10	15	20	25	30	40	50	60	70	80	90	100
CDU6	0.085	0.075	0.068	0.061	0.056	0.052	0.045	0.039	0.035	-	-	-	-
CDU10	0.34	0.30	0.27	0.25	0.23	0.21	0.18	0.16	0.15	-	-	-	-
CDU16	0.99	0.89	0.81	0.74	0.69	0.64	0.56	0.50	0.45	-	-	-	-
CDU20	3.0	2.7	2.5	2.3	2.1	2.0	1.8	1.6	1.4	1.3	1.2	1.1	1.0
CDU25	4.7	4.3	4.0	3.7	3.5	3.2	2.9	2.6	2.4	2.2	2.0	1.9	1.7
CDU32	7.1	6.6	6.1	5.7	5.4	5.1	4.6	4.1	3.8	3.5	3.2	3.0	2.8

#### Non-rotating rod

Without auto switch: CUK□-□D

(N)

Model	Stroke (mm)												
	5	10	15	20	25	30	40	50	60	70	80	90	100
CUK6	0.075	0.068	0.061	0.056	0.052	0.048	0.042	0.037	0.033	-	-	-	-
CUK10	0.30	0.27	0.25	0.23	0.21	0.20	0.17	0.15	0.14	-	-	-	-
CUK16	0.55	0.50	0.46	0.43	0.40	0.37	0.33	0.29	0.26	-	-	-	-
CUK20	1.8	1.6	1.5	1.4	1.3	1.2	1.1	1.0	0.92	0.85	0.78	0.73	0.68
CUK25	3.0	2.7	2.6	2.4	2.2	2.1	1.9	1.7	1.6	1.4	1.3	1.2	1.2
CUK32	4.3	4.0	3.8	3.5	3.3	3.2	2.9	2.6	2.4	2.2	2.1	2.0	1.8

With auto switch: CDUK□-□D

(N)

Model	Stroke (mm)												
	5	10	15	20	25	30	40	50	60	70	80	90	100
CDUK6	0.075	0.068	0.061	0.056	0.052	0.048	0.042	0.037	0.033	-	-	-	-
CDUK10	0.30	0.27	0.25	0.23	0.21	0.20	0.17	0.15	0.14	-	-	-	-
CDUK16	0.81	0.74	0.69	0.64	0.60	0.56	0.50	0.45	0.41	-	-	-	-
CDUK20	2.5	2.3	2.1	2.0	1.9	1.8	1.6	1.4	1.3	1.2	1.1	1.0	1.0
CDUK25	4.0	3.7	3.5	3.2	3.1	2.9	2.6	2.4	2.2	2.0	1.9	1.7	1.6
CDUK32	5.7	5.4	5.1	4.8	4.6	4.4	4.0	3.6	3.4	3.1	2.9	2.7	2.6

#### Single acting/Spring return (S)

Without auto switch: CU□-□S (N)

Model	Stroke (mm)		
	5	10	15
CU6	0.19	0.17	0.15
CU10	0.66	0.59	0.60
CU16	1.4	1.3	1.3
CU20	4.7	4.2	4.4
CU25	6.8	6.2	6.5
CU32	10	9.8	10

With auto switch: CDU□-□S (N)

Model	Stroke (mm)		
	5	10	15
CDU6	0.17	0.15	0.13
CDU10	0.66	0.59	0.60
CDU16	1.6	1.5	1.5
CDU20	5.3	4.8	4.9
CDU25	7.6	7.0	7.2
CDU32	12	11	11

#### Non-rotating rod

#### Single acting/Spring return (S)

Without auto switch: CUK□-□S (N)

Model	Stroke (mm)		
	5	10	15
CUK6	0.17	0.15	0.14
CUK10	0.59	0.54	0.56
CUK16	1.1	1.0	1.1
CUK20	3.9	3.6	3.8
CUK25	5.7	5.3	5.7
CUK32	8.5	7.9	8.6

With auto switch: CDUK□-□S (N)

Model	Stroke (mm)		
	5	10	15
CDUK6	0.15	0.13	0.12
CDUK10	0.59	0.54	0.56
CDUK16	1.3	1.2	1.3
CDUK20	4.4	4.1	4.3
CDUK25	6.5	6.1	6.4
CDUK32	9.7	9.1	9.6

#### Single acting/Spring extend (T)

Without auto switch: CU□-□T (N)

Model	Stroke (mm)		
	5	10	15
CU6	0.067	0.059	0.052
CU10	0.29	0.26	0.24
CU16	0.99	0.89	0.81
CU20	2.2	2.0	1.8
CU25	3.5	3.2	3.0
CU32	5.4	4.9	4.6

With auto switch: CDU□-□T (N)

Model	Stroke (mm)		
	5	10	15
CDU6	0.062	0.055	0.049
CDU10	0.29	0.26	0.24
CDU16	0.99	0.89	0.81
CDU20	3.0	2.7	2.5
CDU25	4.7	4.3	4.0
CDU32	7.1	6.6	6.1

#### Non-rotating rod

#### Single acting/Spring extend (T)

Without auto switch: CUK□-□T (N)

Model	Stroke (mm)		
	5	10	15
CUK6	0.059	0.052	0.047
CUK10	0.26	0.24	0.22
CUK16	0.81	0.74	0.69
CUK20	1.8	1.6	1.5
CUK25	3.0	2.7	2.6
CUK32	4.3	4.0	3.8

With auto switch: CDUK□-□T (N)

Model	Stroke (mm)		
	5	10	15
CDUK6	0.055	0.049	0.044
CDUK10	0.26	0.24	0.22
CDUK16	0.81	0.74	0.69
CDUK20	2.5	2.3	2.1
CDUK25	4.0	3.7	3.5
CDUK32	5.7	5.4	5.1

CUJ

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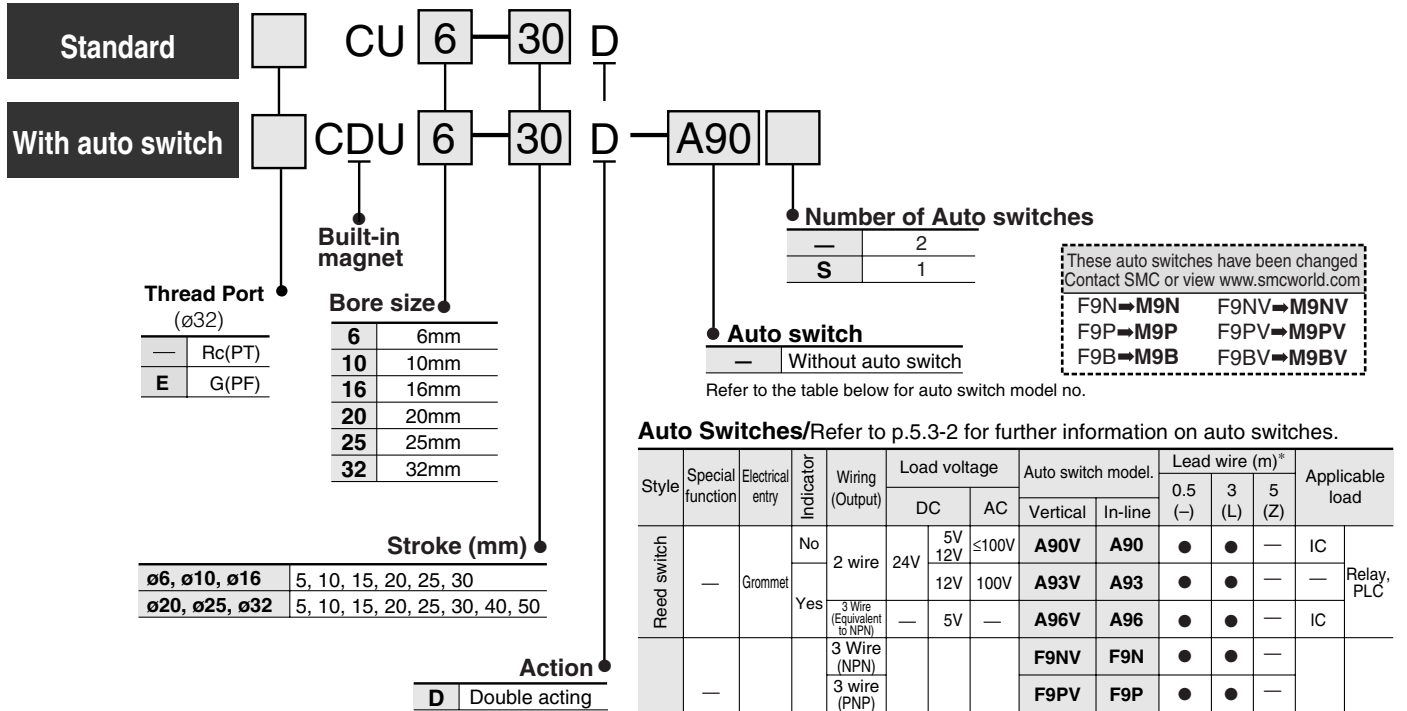
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# Free Mount Cylinder/Double Acting Single Rod

# Series CU

ø6, ø10, ø16, ø20, ø25, ø32

## How to Order



Refer to the table below for auto switch model no.

**Auto Switches/Refer to p.5.3-2 for further information on auto switches.**

Style	Special function	Electrical entry	Indicator	Wiring (Output)	Load voltage		Auto switch model.		Lead wire (m)*			Applicable load	
					DC	AC	Vertical	In-line	0.5 (-)	3 (L)	5 (Z)		
													A90V
Reed switch	—	Grommet	No	2 wire	24V	5V	≤100V	A90V	A90	●	●	—	IC Relay, PLC
			Yes			12V	100V	A93V	A93	●	●	—	
Solid state switch	Diagnostic (2 colour) Water resistant (2 colour)	Grommet	Yes	3 Wire (Equivalent to NPN)	24V	12V	—	F9NV	F9N	●	●	—	— Relay, PLC
			3 wire (PNP)	F9PV				F9P	●	●	—		
			2 wire	F9BV				F9B	●	●	—		
			3 wire (NPN)	F9NWV				F9NW	●	●	○		
			3 wire (PNP)	F9PWV				F9PW	●	●	○		
			2 wire	F9BWV				F9BW	●	●	○		
—	F9BA	—	●	○	—								

\*Lead wire length 0.5m..... — (Example) A93 5m..... Z (Example) F9NWZ  
3m ..... L (Example) A93L

\*Solid state switches marked "○" are manufactured upon receipt of order.

D-9□ auto switch can be installed. Refer to p.5.3-21 and 5.3-22 for further information on D-90, D-90A, D-93A and D-97.

## ⚠ Precautions

Be sure to read before handling.  
Refer to p.0-39 to 0-46 for Safety Instructions precautions and common precautions.

## Tightening Torque

Bore size (mm)	Hex. socket head cap screw (mm)	Tightening torque Nm
ø6, ø10	M3	1.08 ±10%
ø16	M4	2.45 ±10%
ø20, ø25	M5	5.10 ±10%
ø32	M6	8.04 ±10%

# Free Mount Cylinder/Double Acting Single Rod *Series CU*



## Specifications

Bore size (mm)	ø6	ø10	ø16	ø20	ø25	ø32
Fluid	Air					
Proof pressure	1.05MPa					
Max. operating pressure	0.7MPa					
Min. operating pressure	0.12MPa	0.06MPa		0.05MPa		
Ambient and fluid temperature	Without auto switch: -10°C to 70°C With auto switch: -10°C to 60°C (No freezing)					
Lubrication	Not required (Non-lube)					
Operating piston speed	50 to 500mm/s					
Cushion	Rubber bumper					
Rod end thread	Male thread					
Thread tolerance	JIS class 2					
Tolerance of stroke length	$^{+10}_0$ mm					

## Standard Stroke

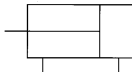
Bore size (mm)	Standard stroke(mm)
ø6, ø10, ø16	5, 10, 15, 20, 25, 30
ø20, ø25, ø32	5, 10, 15, 20, 25, 30, 40, 50

Refer to p.2.1-45 for long stroke.

## Minimum Strokes for Auto Switch Mounting

Number of auto switches	Applicable auto switch		
	D-A9□/D-A9□V	D-F9□/D-F9D-F9□V	D-F9□W/D-F9□WV D-F9BA
1	5	5	5
2	10	5	10

JIS symbol  
Double acting/Single rod



## Theoretical Force

Bore size (mm)	Rod diameter (mm)	Operating direction	Piston area (mm <sup>2</sup> )	Operating pressure (MPa)		
				0.3	0.5	0.7
ø6	3	OUT	28.3	8.49	14.2	19.8
		IN	21.2	6.36	10.6	14.8
ø10	4	OUT	78.5	23.6	39.3	55.0
		IN	66.0	19.8	33.0	46.2
ø16	6	OUT	201	60.3	101	141
		IN	172	51.6	86.0	121
ø20	8	OUT	314	94.2	157	220
		IN	264	79.2	132	185
ø25	10	OUT	491	147	246	344
		IN	412	124	206	288
ø32	12	OUT	804	241	402	563
		IN	691	207	346	454



**Made to Order**

Refer to p.5.4-1 for made to order specifications of series CU.

## Weight/( ) With D-A90

Model	Cylinder stroke(mm)							
	5	10	15	20	25	30	40	50
C(D)U6-□D	22 (27)	25 (350)	28 (38)	31 (41)	34 (44)	37 (47)	-	-
C(D)U10-□D	36 (41)	40 (50)	44 (54)	48 (58)	52 (62)	56 (66)	-	-
C(D)U16-□D	50 (75)	56 (86)	62 (92)	68 (98)	74 (104)	80 (110)	-	-
C(D)U20-□D	95 (128)	106 (143)	117 (154)	128 (165)	139 (176)	150 (187)	172 (209)	194 (231)
C(D)U25-□D	176 (230)	193 (252)	210 (269)	227 (286)	244 (303)	261 (320)	295 (354)	329 (388)
C(D)U32-□D	262 (335)	286 (364)	310 (388)	334 (412)	358 (436)	382 (460)	430 (508)	478 (556)

\*Refer to p.5.3-75 for auto switch weight.

CUJ

CU

CQS

CQ2

RQ

MU

# Series CU

## Copper Free

20-CU Bore size Stroke D

• Copper free

To prevent the generation of copper ions in order to eliminate any influences of copper ions or fluororesins on colour CRTs, copper materials have been electroless nickel plated or replaced with non-copper materials.

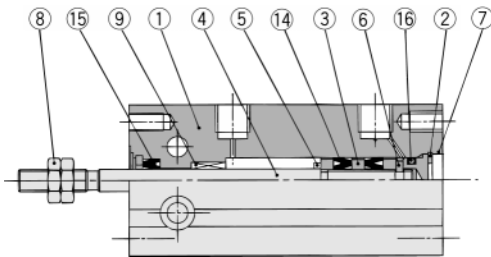
### Min. Operating Pressure

(MPa)

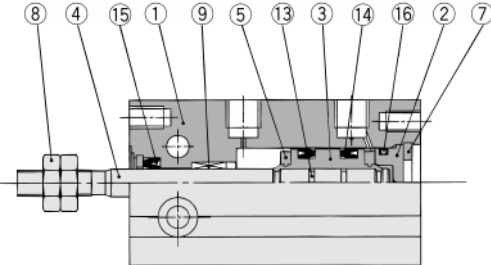
Bore size(mm)	ø6	ø10, ø16	ø20, ø25, ø32
Min. operating press.	0.12	0.06	0.05

## Construction

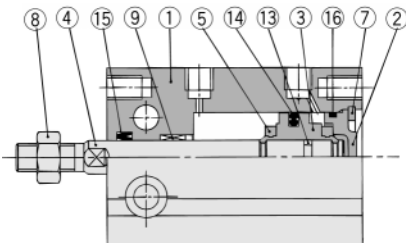
ø6



ø10



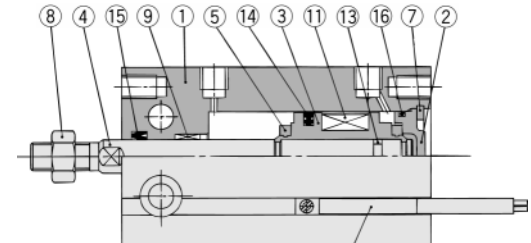
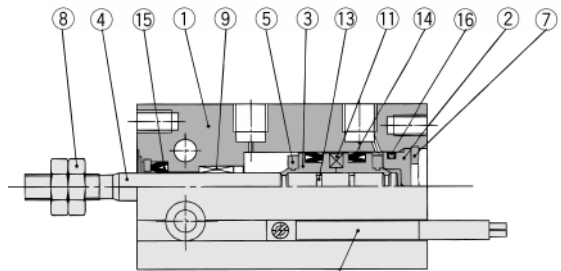
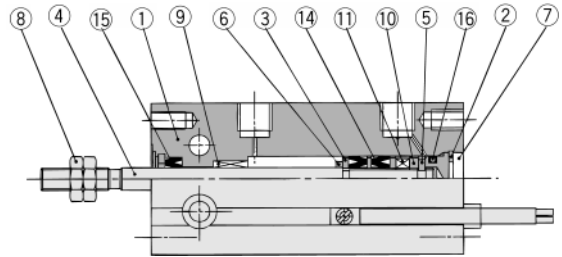
ø16 to ø32



## Specifications

Action	Double acting, single rod style
Bore size (mm)	ø6, ø10, ø16, ø20, ø25, ø32
Max. operating pressure	1.05MPa
Cushion	Rubber bumper
Stroke	Same as standard model (Refer to p.2.1-12)
Auto switch	Attachable

## With auto switch



## Component Parts

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

No.	Description	Material	Note
⑧	Rod edge nut	Carbon steel	Nickel plated
⑨	Bushing	Oil impregnated sintered alloy	
⑩	Magnet holder	Brass	ø6
⑪	Magnet	Magnet material	
⑫	Auto switch	—	
⑬	Piston gasket	NBR	
⑭*	Piston seal		
⑮*	Rod seal		
⑯*	Gasket		

## Replacement Parts: Seal Kits

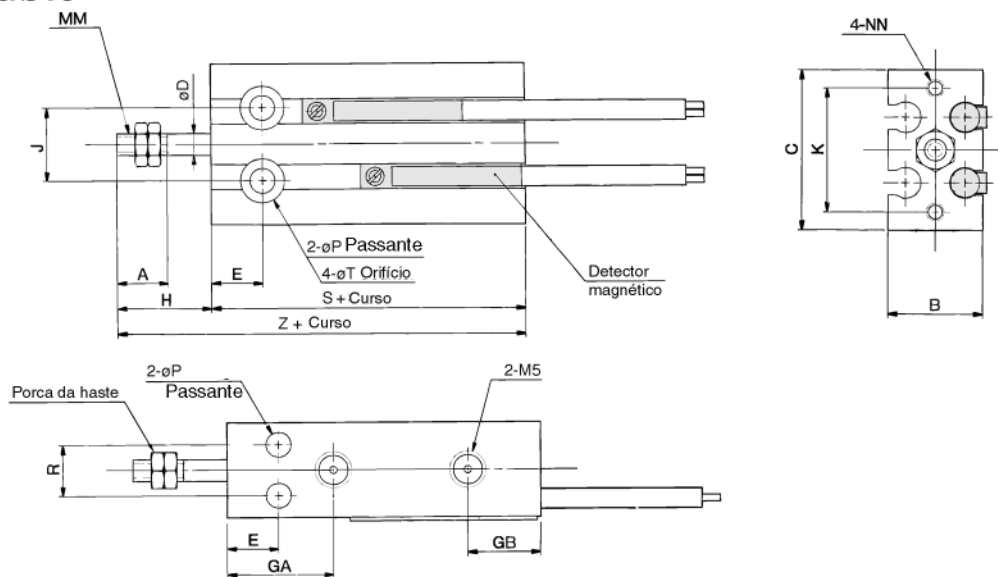
Bore size (mm)	Kit No.	Contents
ø10	CU10D-PS	Kits includes items ⑭, ⑮ and ⑯ from the table above.
ø16	CU16D-PS	
ø20	CU20D-PS	
ø25	CU25D-PS	
ø32	CU32D-PS	

Seal kits consist of items ⑭, ⑮ and ⑯ contained in one kit, and can be ordered using the order number for each respective tube bore size.

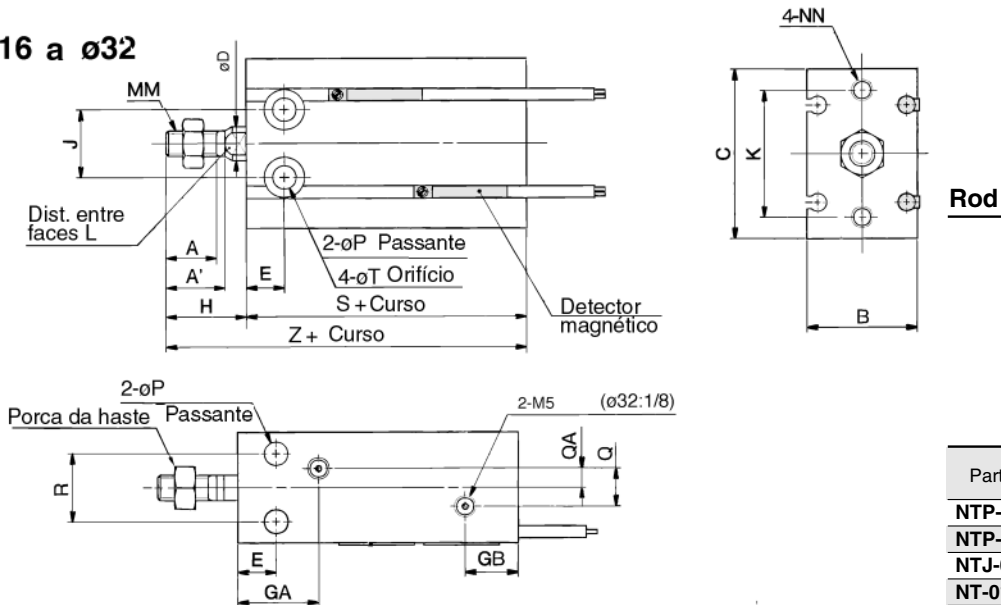
# Free Mount Cylinder/Double Acting Single Rod **Series CU**

## Dimensions/Double Acting Single Rod

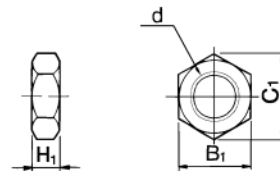
**ø6/ø10**



**ø16 a ø32**



**Rod end nut/Option**



Material: Carbon steel

Part No.	Tube size (mm)	d	H1	B1	C1
<b>NTP-006</b>	<b>6</b>	M3	1.8	5.5	6.4
<b>NTP-010</b>	<b>10</b>	M4	2.4	7	8.1
<b>NTJ-015A</b>	<b>16</b>	M5	4	8	9.2
<b>NT-015A</b>	<b>20</b>	M6	5	10	11.5
<b>NT-02</b>	<b>25</b>	M8	5	13	15.0
<b>NT-03</b>	<b>32</b>	M10 X 1.25	6	17	19.6

- CUJ**
- CU**
- CQS**
- CQ2**
- RQ**
- MU**

Bore (mm)	(mm)																
	A	A'	B	C	D	E	GA	GB	H	J	K	L	MM	NN	P	Q	QA
<b>6</b>	7	-	13	22	3	7	15	10	13	10	17	-	M3	M3 Depth5	3.2	-	-
<b>10</b>	10	-	15	24	4	7	16.5	10	16	11	18	-	M4	M3 Depth5	3.2	-	-
<b>16</b>	11	12.5	20	32	6	7	16.5 <sup>(1)</sup>	11.5	16	14	25	5	M5	M4 Depth6	4.5	4	2
<b>20</b>	12	14	26	40	8	9	19	12.5	19	16	30	6	M6	M5 Depth8	5.5	9	4.5
<b>25</b>	15.5	18	32	50	10	10	21.5	13	23	20	38	8	M8	M5 Depth8	5.5	9	4.5
<b>32</b>	19.5	22	40	62	12	11	23	12.5	27	24	48	10	M10 X 1.25	M6 Depth9	6.6	13.5	4.5

Bore (mm)	R	T	W/o auto switch		W/ auto switch	
			S	Z	S	Z
<b>6</b>	7	6 Depth4.8	33	46	33	46
<b>10</b>	9	6 Depth5	36	52	36	52
<b>16</b>	12	7.6 Depth6.5	30	46	40	56
<b>20</b>	16	9.3 Depth8	36	55	46	65
<b>25</b>	20	9.3 Depth9	40	63	50	73
<b>32</b>	24	11 Depth11.5	42	69	52	79

Note 1) 5 stroke (CU16-5D): 14.5mm



**Auto Switch Specifications**

Refer to the p.5.3-2 for details on auto switches.

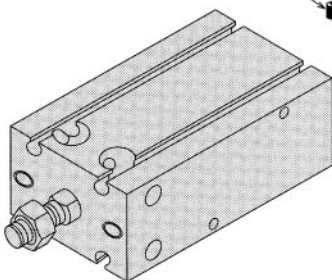
**Applicable auto switch model**

Bore size	Auto switch model	Electrical entry (Function)	Page	
ø12, ø16 ø20, ø25	Reed switch	D-A90	2 wire, In-line	5.3-19
		D-A93		
		D-A96	3 wire, In-line	5.3-19
		D-A90V		
		D-A93V	2 wire, Perpendicular	5.3-20
		D-A96V		
	Solid state switch	D-F9N	3 wire, NPN In-line	5.3-39
		D-F9P		
		D-F9B	2 wire, In-line	5.3-39
		D-F9NW		
		D-F9PW	3 wire, NPN In-line (2 colour)	5.3-66
		D-F9BW		
		D-F9NV	2 wire, In-line (2 colour)	5.3-66
		D-F9PV		
		D-F9BV	3 wire, NPN Perpendicular	5.3-39
		D-F9BWV		
		D-F9BVV	3 wire, PNP In-line (2 colour)	5.3-66
		D-F9PWV		
		D-F9BWV	2 wire, Perpendicular (2 colour)	5.3-66
		D-F9BAL		
	Grommet	2 wire, In-line (2 colour), water resistant	5.3-67	

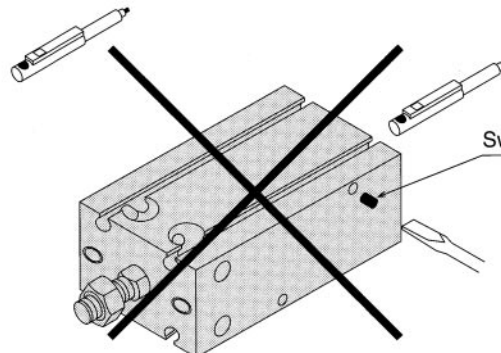
D-9□ auto switches are attachable. Refer to p.5.3-21 and 5.3-22 for further information on D-90, D-90A, D-93A and D-97.

**Auto Switch Mounting****Auto Switch Groove Position****D-A9□, F9□, A9□V, F9□**Flat head watchmakers  
screw driver

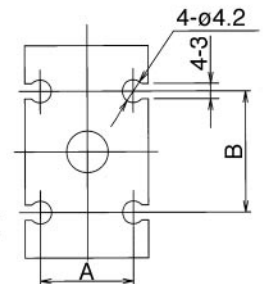
Set screw



- When tightening the auto switch mounting screw, use a watch makers screw driver with a handle about 5 to 6mm in diameter.
- Also tighten to a torque of approximately 0.10 to 0.20Nm.



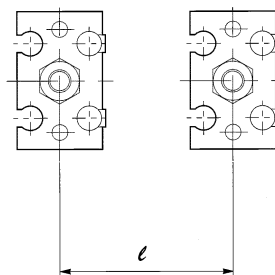
- Do not use BU-1 (Switch mounting screw for D-9□ auto switch). Auto switch may be damaged.

Switch mounting screw  
BU-1

Bore size (mm)	A	B
ø 6	8.2	9
ø10	10.3	13
ø16	15	18
ø20	21	23
ø25	27	25
ø32	35	27

**Precautions on Proximity Installation**

When universal mounting cylinders equipped with D-A9□ or D-F9□ 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. (Contact SMC for details.)

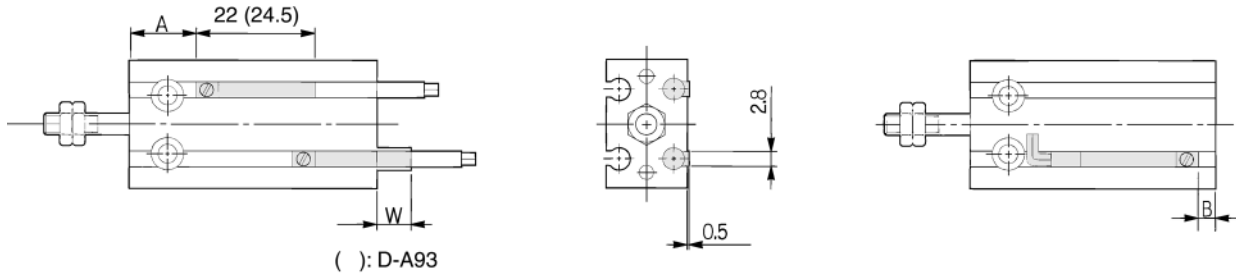


Bore size(mm)	Installed distance l (mm)
ø 6	18
ø10	20
ø16	33
ø20	40
ø25	46
ø32	56

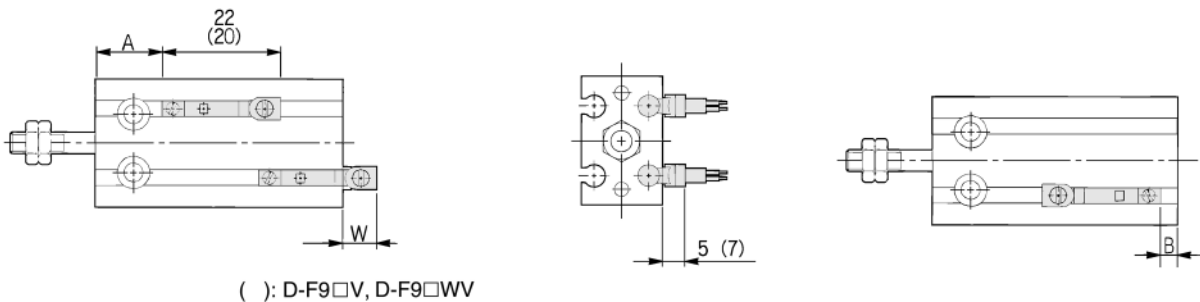


## Auto Switch Mounting Position

**D-A9□**  
**D-F9□**



**D-A9□V**  
**D-F9□V**



CUJ  
CU  
CQS  
CQ2  
RQ  
MU

### CDU Double acting single rod

(mm)

Bore size (mm)	D-A9□/D-A9□V			D-F9N/D-F9B/D-F9P/D-F9□W			D-F9□V/D-F9□WV			D-F9BA		
	A	B	W	A	B	W	A	B	W	A	B	W
6	13	-0.5	2.5(5)	17.5	4	6.5	17.5	4	4.5	16.5	3	16.5
10	12	3	-1.5(1)	16.5	7.5	2.5	16.5	7.5	0.5	15.5	6.5	12.5
16	15.5	3.5	-2(0.5)	20	8	2	20	8	0	19	7	12
20	19.5	5.5	-4(-1.5)	24	10	0	24	10	-2	23	9	10
25	22	7	-5.5(-3)	27.5	11.5	-1.5	27.5	11.5	-3.5	25.5	10.5	8.5
32	23	8	-6.5(-4)	28.5	12.5	-2.5	28.5	12.5	-4.5	26.5	11.5	7.5



Note 1 ) Negative figures of the table show dimensions mounted inside cylinder body.

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

Note 3 ) Figures in ( ) are for D-A93.



## Precautions

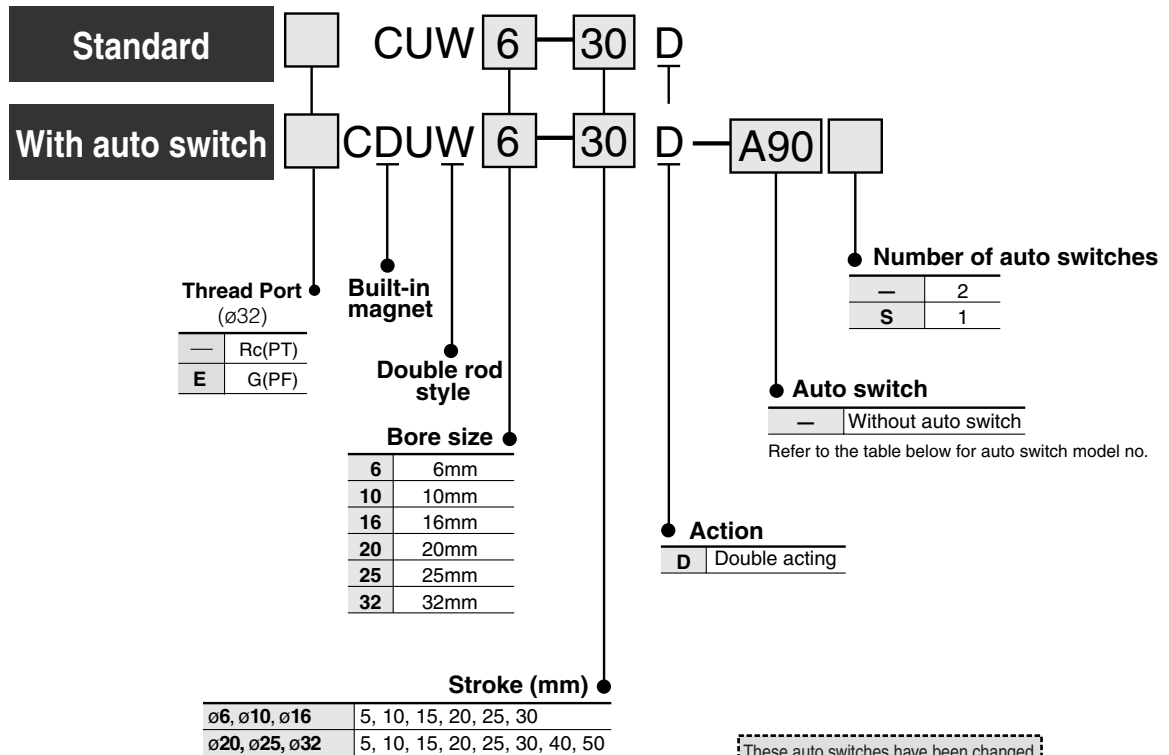
Be sure to read before handling. Refer to p.0-44 to 0-46 for common precautions of auto switch.

# Free Mount Cylinder/Double Acting Double Rod

# Series CUW

ø6, ø10, ø16, ø20, ø25, ø32

## How to Order



These auto switches have been changed  
Contact SMC or view [www.smcworld.com](http://www.smcworld.com)

F9N→M9N    F9NV→M9NV  
F9P→M9P    F9PV→M9PV  
F9B→M9B    F9BV→M9BV

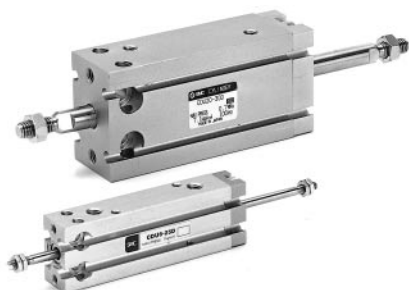
### Applicable Auto Switches/Refer to p.5.3-2 for further information on auto switches.

Style	Special function	Electrical entry	Indicator	Wiring (Output)	Load voltage		Model		Lead wire (m)*			Applicable load	
					DC	AC	Perp.	In-line	0.5 (-)	3 (L)	5 (Z)		
Reed switch	—	Grommet	No	2 wire	24V	5V	≤ 100V	A90V	A90	●	●	—	IC
			Yes			12V		100V	A93V	A93	●	●	—
			—	3 wire (Equiv.NPN)	—	5V	—	A96V	A96	●	●	—	IC
Solid state switch	—	Grommet	Yes	3 wire (NPN)	24V	12V	—	F9NV	F9N	●	●	—	Replay PLC
				3 wire (PNP)				F9PV	F9P	●	●	—	
				2 wire				F9BV	F9B	●	●	—	
	3 wire (NPN)			F9NWV				F9NW	●	●	○		
	3 wire (PNP)			F9PWV				F9PW	●	●	○		
	—			F9BWV				F9BW	●	●	○		
	2 wire			—				F9BA	—	●	○		
Diagnostic (2 colour)	Water resistant (2 colour)	—	—	—	—	—	—	—	—	—	—	—	

\*Lead wire length 0.5m..... — (Example) A93  
3m..... L (Example) A93L  
5m..... Z (Example) F9NWZ

\*Solid state auto switches marked with a "○" are manufactured upon receipt of order.

# Free Mount Cylinder/Double Acting Double Rod *Series CUW*



## Specifications

Bore size (mm)	ø6	ø10	ø16	ø20	ø25	ø32
Fluid	Air					
Proof pressure	1.05MPa					
Max. operating pressure	0.7MPa					
Min. operating pressure	0.15MPa	0.10MPa		0.08MPa		
Ambient and fluid temperature	Without auto switch: -10 °C to 70 °C (No freezing) Without auto switch: -10 °C to 60 °C					
Lubrication	Not required (Non-lube)					
Operating piston speed	50 to 500mm/s					
Cushion	Rubber bumper					
Rod end thread	Male thread					
Thread tolerance	JIS class 2					
Stroke tolerance	+1.0 0 mm					

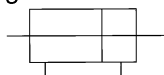
## Standard Stroke

Bore size (mm)	Standard stroke(mm)
ø6, ø10, ø16	5, 10, 15, 20, 25, 30
ø20, ø25, ø32	5, 10, 15, 20, 25, 30, 40, 50

## Minimum Strokes for Auto Switch Mounting

Number of auto switches	Applicable auto switch model		
	D-A9□/D-A9□V	D-F9□/D-F9□V	D-F9□W/D-F9□WV D-F9BA
1	5	5	5
2	10	5	10

JIS symbol  
Double acting/Double rod



## Theoretical Force

Bore size (mm)	Rod diameter (mm)	Piston area (mm <sup>2</sup> )	Operating pressure (MPa)		
			0.3	0.5	0.7
ø6	3	21.2	6.36	10.6	14.8
ø10	4	66.0	19.8	33.0	46.2
ø16	6	172	51.6	86.0	121
ø20	8	264	79.2	132	185
ø25	10	412	124	206	288
ø32	12	691	207	346	484

## ⚠ Precautions

Be sure to read before handling.  
Refer to p.0-39 to 0-46 for Safety  
Instructions and common  
precautions.

## Weight/( ) With D-A90

Model	Stroke (mm)							
	5	10	15	20	25	30	40	50
C(D)UW6-□D	27 (32)	30 (40)	34 (44)	37 (47)	40 (50)	44 (54)	-	-
C(D)UW10-□D	44 (49)	49 (59)	53 (63)	58 (68)	62 (72)	67 (77)	-	-
C(D)UW16-□D	74 (99)	81 (111)	88 (118)	95 (125)	102 (132)	109 (139)	-	-
C(D)UW20-□D	132 (16)	145 (182)	158 (195)	171 (208)	184 (221)	197 (234)	223 (260)	250 (287)
C(D)UW25-□D	240 (294)	260 (319)	280 (339)	300 (359)	321 (380)	341 (400)	381 (440)	421 (480)
C(D)UW32-□D	365 (438)	394 (472)	422 (500)	451 (529)	479 (557)	508 (586)	586 (664)	622 (700)

Refer to p.5.3-75 for weight of auto switch.

## Tightening Torque

Refer to p.2.1-11 for CUW series mounting

CUJ

CU

CQS

CQ2

RQ

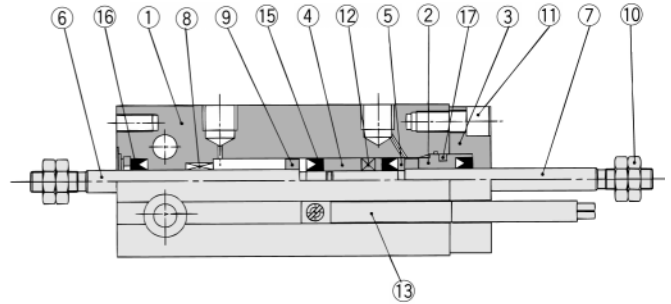
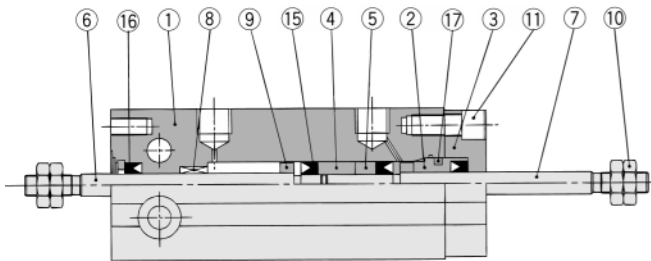
MU

# Series CUW

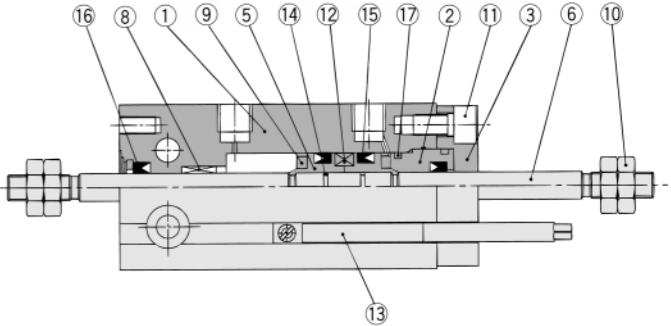
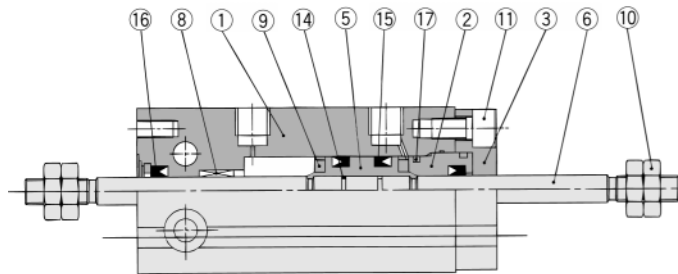
## Construction

ø6

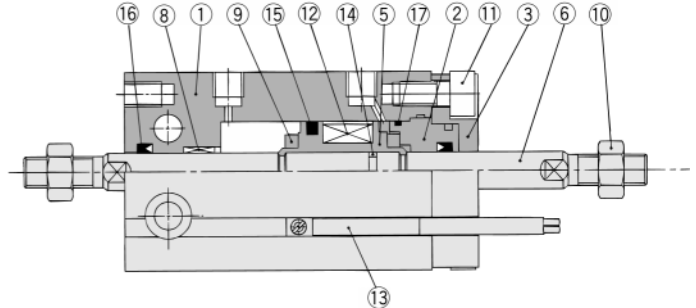
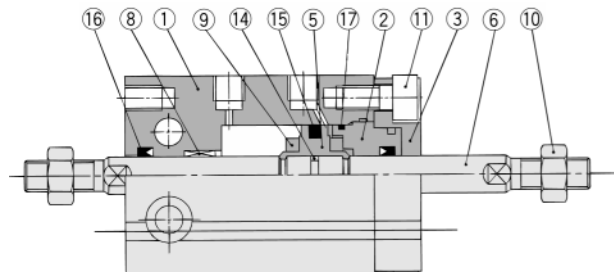
With auto switch



ø10



ø16 to ø32



### Component Parts

No.	Description	Material	Note
①	Cylinder tube	Aluminum alloy	Hard anodized
②	Rod cover	Aluminum bearing alloy	Chromated
③	Rod cover retainer	Aluminum alloy	Hard anodized
④	Piston	Brass	ø6
⑤	Piston	Brass	ø6, ø10
		Aluminum alloy	ø16 to ø32, chromated
⑥	Piston rod	Stainless steel	
⑦	Piston rod	Stainless steel	ø6
⑧	Bushing	Oil impregnated sintered alloy	

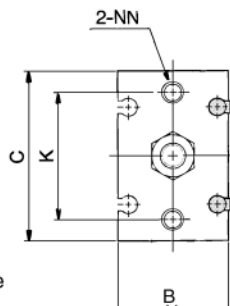
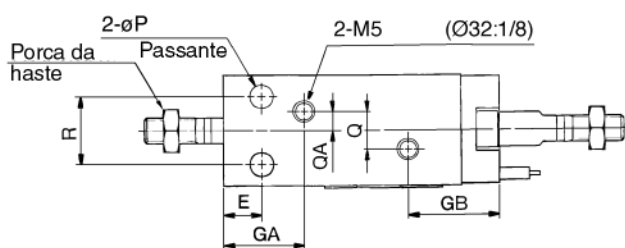
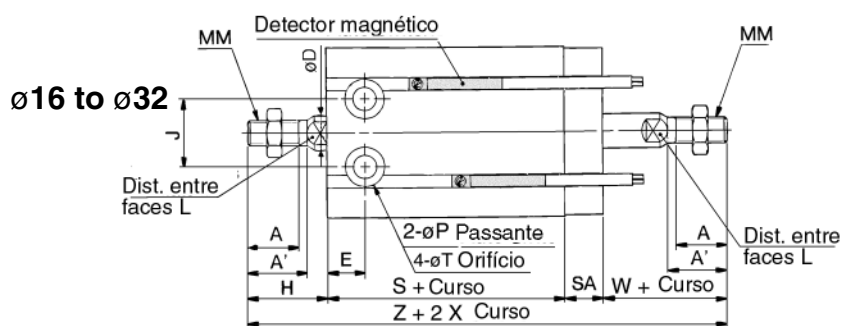
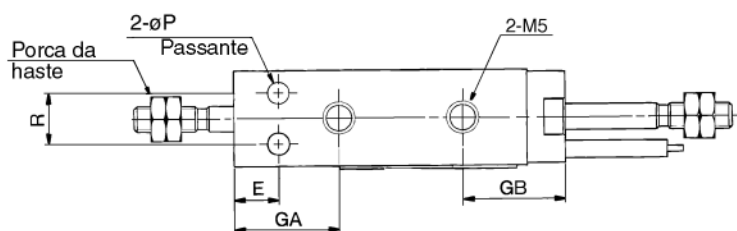
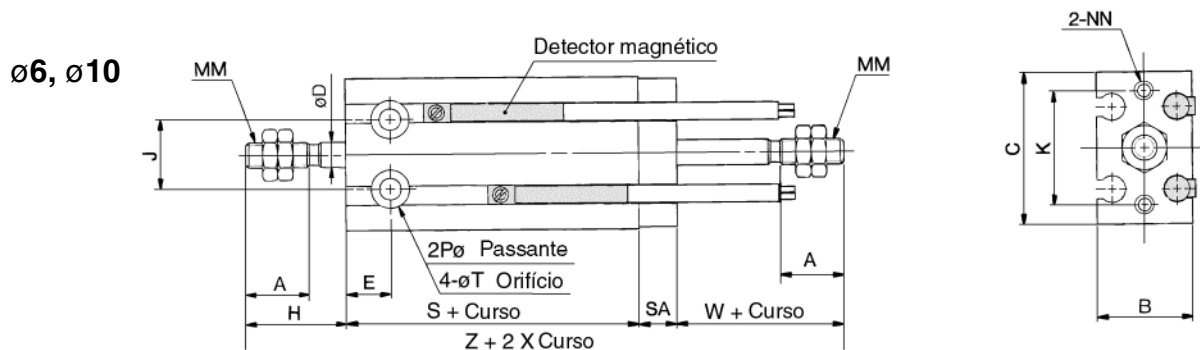
No.	Description	Material	Note
⑨	Bumper	Urethane	
⑩	Rod end nut	Carbon steel	Nickel plated
⑪	Hex. socket head cap screw	Carbon steel	Nickel plated
⑫	Magnet	Magnet material	
⑬	Auto switch	—	
⑭	Piston gasket	NBR	
⑮	Piston seal		
⑯	Rod seal		
⑰	Gasket		

### Replacement Parts

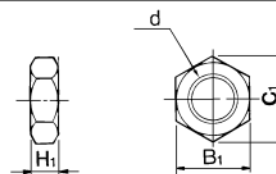
No.	Description	Material	Bore size/Part No.					
			ø6	ø10	ø16	ø20	ø25	ø32
⑮	Piston seal	NBR	MYP-6A	MYP-10A	PPD-16	PPD-20	PPD-25	PPD-32
⑯	Rod seal		MYR-3	MYR-4	DYR-6K	DYR-8K	DYR-10SK	DYR-12
⑰	Gasket		ø7 X ø5 X ø1	ø10 X ø8 X ø1	ø16 X ø14 X ø1	C18	C22	C29

# Free Mount Cylinder/Double Acting Double Rod *Series CUW*

## Dimensions/Double Acting Double Rod



### Porca da haste/opções



Material: Carbon steel

Part No.	Tube bore size (mm)	d	H1	B1	C1
NTP-006	6	M3	1.8	5.5	6.4
NTP-010	10	M4	2.4	7	8.1
NTJ-015A	16	M5	4	8	9.2
NT-015A	20	M6	5	10	11.5
NT-02	25	M8	5	13	15.0
NT-03	32	M10 X 1.25	6	17	19.6

(mm)

Bore (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	16	13	10	17	-	M3	M3 Depth5	3.2	-	-
10	10	-	15	24	4	7	16.5	16	16	11	18	-	M4	M3 Depth5	3.2	-	-
16	11	12.5	20	32	6	7	16.5 <sup>(1)</sup>	19	16	14	25	5	M5	M4 Depth6	4.5	4	2
20	12	14	26	40	8	9	19	21.5	19	16	30	6	M6	M5 Depth8	5.5	9	4.5
25	15.5	18	32	50	10	10	21.5	22	23	20	38	8	M8	M5 Depth8	5.5	9	4.5
32	19.5	22	40	62	12	11	23	22.5	27	24	48	10	M10 X 1.25	M6 Depth9	6.6	13.5	4.5

Bore (mm)	R	SA	T	W	W/o auto switch		W/ auto switch	
					S	Z	S	Z
6	7	6	6 Depth4.8	13	38	70	38	70
10	9	6	6 Depth5	16	36	74	36	74
16	12	7.5	7.6 Depth6.5	16	30	69.5	40	79.5
20	16	9	9.3 Depth8	19	36	83	46	93
25	20	9	9.3 Depth9	23	40	95	50	105
32	24	10	11 Depth11.5	27	42	106	52	116

Note 1) 5 stroke (CUW16-5D): GA=14.5

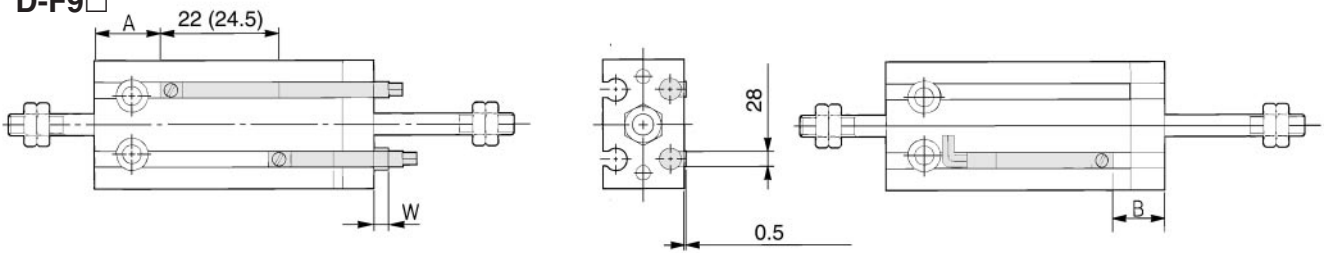
- CUJ
- CU
- CQS
- CQ2
- RQ
- MU

# Series CUW

## Auto Switch Mounting Position

D-A9□

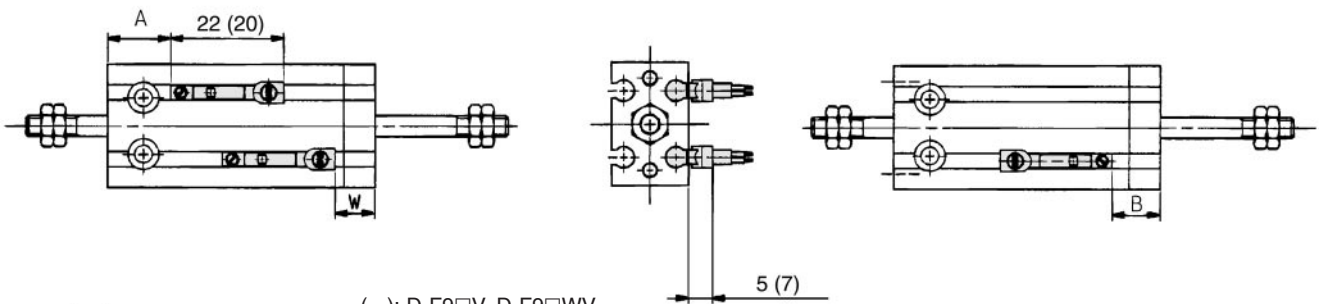
D-F9□



( ) : D-A93

D-A9□V

D-F9□V



( ) : D-F9□V, D-F9□WV

(mm)

Bore (mm)	D-A9□/D-A9□V			D-F9N/D-F9B/D-F9P/D-F9□W			D-F9□V/D-F9□WV			D-F9BA		
	A	B	W	A	B	W	A	B	W	A	B	W
6	13	5.5	-3.5(-1)	17.5	10	0.5	17.5	10	-1.5	16.5	10	10.5
10	12	9	-7.5(-5)	16.5	13.5	-3.5	16.5	13.5	-5.5	15.5	13.5	6.5
16	15.5	11	-9.5(-7)	20	15.5	-5.5	20	15.5	-7.5	19	15.5	4.5
20	19.5	14.5	-13(-10.5)	24	19	-9	24	19	-11	23	19	1
25	22	16	-14.5(-12)	27.5	20.5	-10.5	27.5	20.5	-12.5	25.5	20.5	-0.5
32	23	18	-16.5(-14)	28.5	22.5	-12.5	28.5	22.5	-14.5	26.5	22.5	-2.5



Note 1) Negative figures of the table show dimensions mounted inside cylinder body.

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

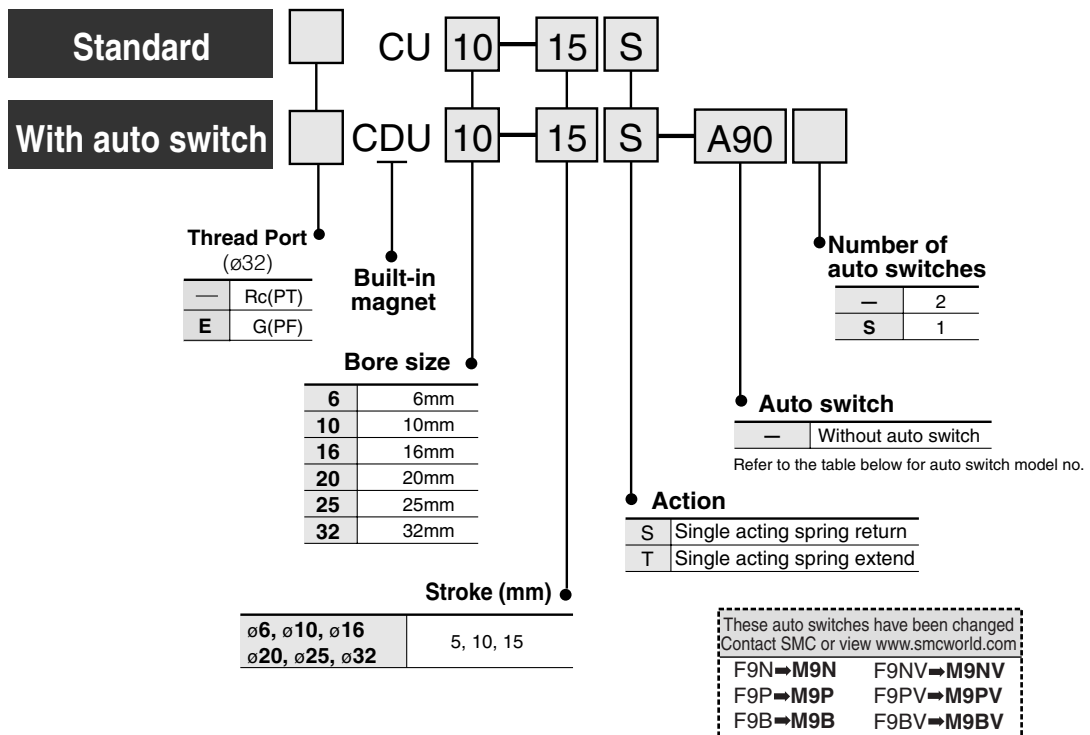
Note 3) Figures in ( ) are for D-A93.

# Free Mount Cylinder/Single Acting Spring Return/Extend

# Series CU

ø6, ø10, ø16, ø20, ø25, ø32

## How to Order



**Applicable Auto Switches**/Refer p.5.3-2 for further information on auto switches.

Style	Special function	Electrical entry	Indicator	Wiring (Output)	Load voltage		Model		Lead wire (m)*			Applicable load		
					DC	AC	Perp.	In-Line	0.5 (-)	3 (L)	5 (Z)			
													24V	5V
Reed switch	—	Grommet	No	2 wire	24V	5V	12V	≤ 100V	A90V	A90	●	●	—	IC Relay, PLC
					12V	100V	A93V	A93	●	●	—			
					—	5V	—	A96V	A96	●	●	—		
Solid state switch	—	Grommet	Yes	3 wire (NPN)	24V	12V	—	F9NV	F9N	●	●	—	— Relay, PLC	
				3 wire (PNP)				F9PV	F9P	●	●	—		
				2 wire				F9BV	F9B	●	●	—		
	3 wire (NPN)			F9NWV				F9NW	●	●	○			
	3 wire (PNP)			F9PWV				F9PW	●	●	○			
	2 wire			F9BWV				F9BW	●	●	○			
	2 wire			—				F9BA	—	●	○			
Diagnostic (2 colour)	Water resistant (2 colour)	2 wire	—	—	—	—	—	—	—	—	—	—		



# Series CU



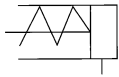
## Specifications

Bore size (mm)	ø6	ø10	ø16	ø20	ø25	ø32
Fluid	Air					
Proof pressure	1.05MPa					
Max. operating pressure	0.7MPa					
Min. operating pressure	0.2MPa	0.15MPa		0.13MPa		
Ambient and fluid temperature	Without auto switch: -10°C to 70°C (No freezing) With auto switch : -10°C to 60°C					
Lubrication	Not required (Non-lube)					
Operating piston speed	50 to 500mm/s					
Cushion	Rubber bumper <sup>(1)</sup>					
Rod end thread	Male thread					
Thread tolerance	JIS class 2					
Stroke tolerance	+10 0 mm					

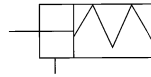
Note 1) ø6 with auto switch style: One side rubber bumper

## JIS symbol

Single action/Spring return



Single action/Spring extend



## Standard Stroke

(mm)

Bore size (mm)	Standard stroke (mm)
ø6, ø10, ø16, ø20, ø25, ø32	5, 10, 15

## Minimum Strokes for Auto Switch Mounting

(mm)

Number of auto switches	Applicable auto switch model		
	D-A9□/D-A9□V	D-F9□/D-F9□V	D-F9□W/D-F9□WV D-F9BAL
1	5	5	5
2	10	5	10



## Made to Order

Refer to p.5.4-1 for made to order specifications of CU series.



## Precautions

Be sure to read before handling.  
Refer to p.0-39 to 0-46 for Safety Instructions and common precaution.

## Theoretical Force

(N)

Action	Bore size (mm)	Operating pressure (MPa)		
		0.3	0.5	0.7
Spring return (S)	ø6	4.99	10.7	16.3
	ø10	16.7	32.4	48.1
	ø16	45.6	86.3	126
	ø20	73	136	199
	ø25	119	218	316
	ø32	207	368	529
Spring extend (T)	ø6	2.86	7.10	11.3
	ø10	12.9	26.1	39.3
	ø16	37.2	71.8	106
	ø20	58	111	164
	ø25	95	178	260
	ø32	173	312	450

Refer p.5.6-4 for reactive force of spring return.

## Weight/( ): With D-A90

Unit: g

Model	Stroke (mm)		
	5	10	15
C(D)U6-□S,T	22(27)	25(35)	28(38)
C(D)U10-□S,T	36(41)	40(50)	48(58)
C(D)U16-□S,T	50(75)	56(86)	71(101)
C(D)U20-□S,T	95(128)	106(143)	133(170)
C(D)U25-□S,T	176(230)	193(252)	235(294)
C(D)U32-□S,T	262(335)	286(364)	347(425)

\*Refer to p.5.3-75 for weight of auto switch.

## Tightening Torque

Refer to p.2.1-11 for mounting of CU single acting style.

## Applicable Auto Switch

### Reed switch

Model No.	Electrical entry (Function)	Page
D-A90	Grommet	2 wire, In-line
D-A93		
D-A96		3 wire, In-line
D-A90V		
D-A93V		2 wire, Perpendicular
D-A96V		

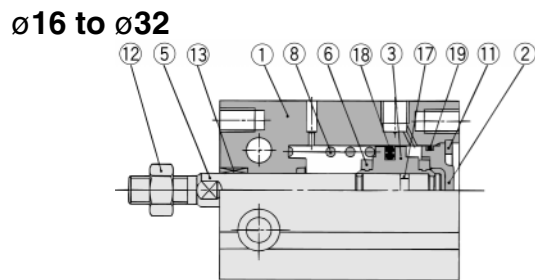
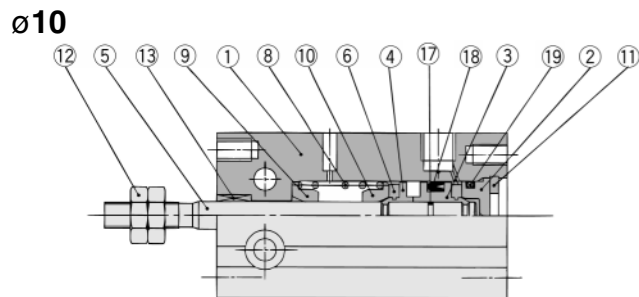
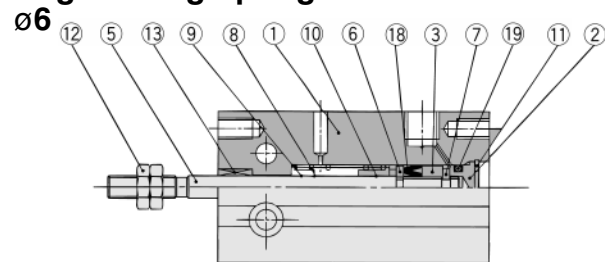
D-9□ auto switches are attachable. Refer to p.5.3-21 and 5.3-22 for further information of D-90, D-90A, D-93A and D-97.

### Solid state switch

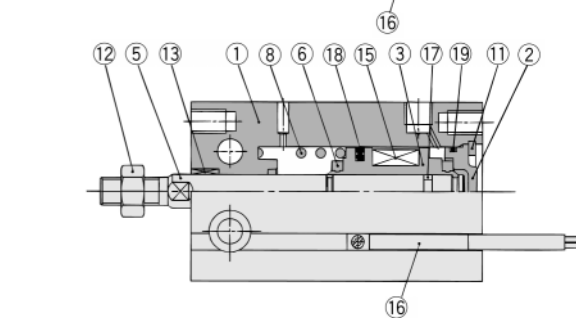
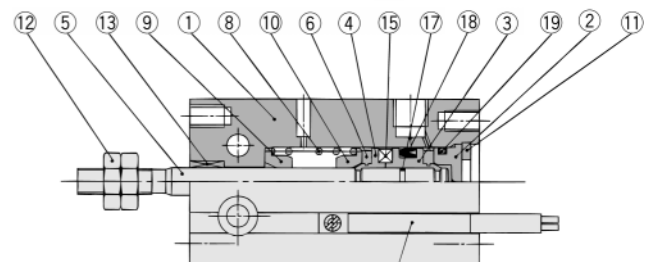
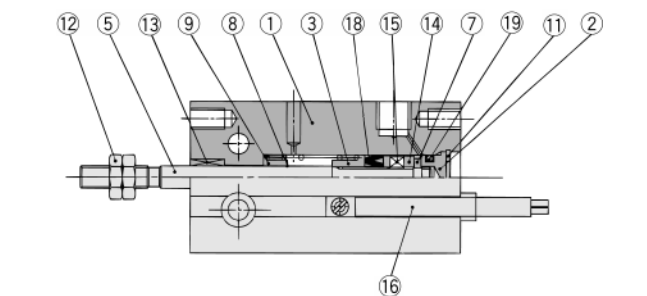
Model No.	Electrical entry (Function)	Page
D-F9N	Grommet	3 wire, NPN In-line
D-F9P		3 wire, PNP In-line
D-F9B		2 wire, In-line
D-F9NW		3 wire, NPN In-line (2 colour)
D-F9PW		3 wire, PNP In-line (2 colour)
D-F9BW		2 wire, In-line (2 colour)
D-F9NV	Grommet	3 wire, NPN Perpendicular
D-F9PV		3 wire, PNP Perpendicular
D-F9BV		2 wire, Perpendicular
D-F9NWV		3 wire, NPN Perpendicular (2 colour)
D-F9PWV		3 wire, PNP Perpendicular (2 colour)
D-F9BWV		2 wire, Perpendicular (2 colour)
D-F9BAL	2 wire, In-line (2 colour, water resistant)	5.3-67

## Construction

### Single acting/Spring return



### With auto switch



CUJ

CU

CQS

CQ2

RQ

MU

### Component Parts

No.	Description	Material	Note
①	Cylinder tube	Aluminum alloy	Hard anodized
②	Head cover	Brass	ø6 to ø10, Electroless nickel plated
		Aluminum alloy	ø16 to ø32, White chromated
③	Piston	Brass	ø6 to ø10
		Aluminum alloy	ø16 to ø32, Chromated
④	Piston	Brass	ø10
⑤	Piston rod	Stainless steel	
⑥	Bumper A	Urethane	
⑦	Bumper B	Urethane	
⑧	Return spring	Piano wire	Zinc chromated

No.	Description	Material	Note
⑨	Spring seat	Brass	
⑩	Spring seat	Brass	
⑪	Snap ring	Stainless steel	Phosphate coating
⑫	Rod end nut	Urethane	Nickel plated
⑬	Bushing	Piano wire	
⑭	Magnet holder	Brass	ø6
⑮	Magnet	Hard anodized	
⑯	Auto switch		
⑰	Piston gasket	NBR	
⑱*	Piston seal		
⑲*	Gasket		

### Replacement Parts

No.	Description	Material	Bore size/Parts No.				
			ø10	ø16	ø20	ø25	ø32
⑱*	Piston seal	NBR	MYP-10A	NLP-16L	NLP-20L	NLP-25L	NLP-32L
⑲*	Gasket		ø10 X ø8 X ø1	ø16 X ø14 X ø1	C18	C22	C29

\*Consult SMC when seals of bore size 6 is replaced.

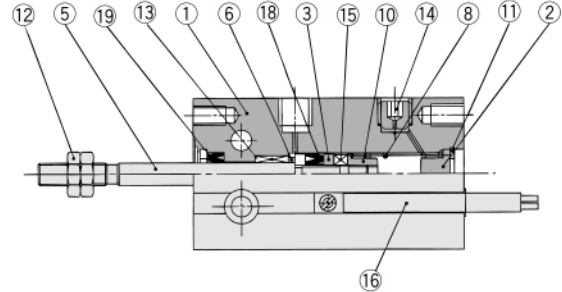
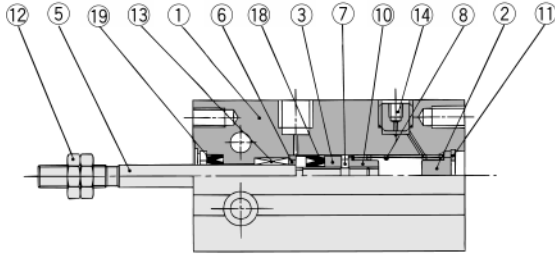
# Series CU

## Construction

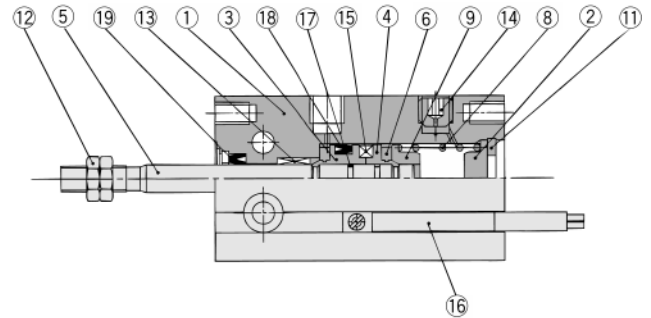
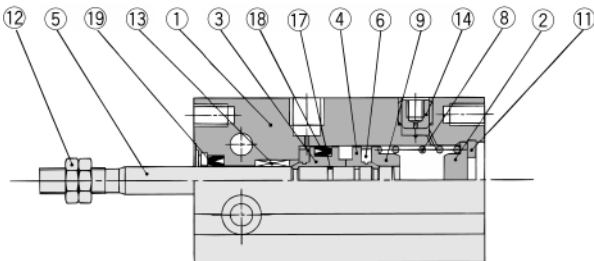
### Single acting/Spring extend

### With auto switch

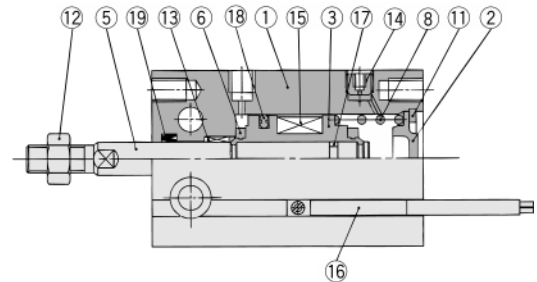
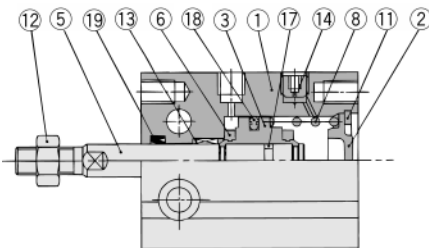
ø6



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
		Aluminum alloy	ø16 to ø32, White chromated
③	Piston	Brass	ø6 to ø10
		Aluminum alloy	ø16 to ø32, Chromated
④	Piston	Brass	ø10
⑤	Piston rod	Stainless steel	
⑥	Bumper A	Urethane	
⑦	Bumper B	Urethane	
⑧	Return spring	Piano wire	Zinc chromated
⑨	Spring seat	Brass	

No.	Description	Material	Note
⑩	Stopper	Brass	ø6
⑪	Snap ring	Carbon tool steel	Phosphate coating
⑫	Rod end nut	Carbon steel	Nickel plated
⑬	Bushing	Oil impregnated sintered alloy	
⑭	Plug with fixed orifice	Alloy steel	Black zinc chromated
⑮	Magnet	Magnet material	
⑯	Auto switch	—	
⑰	Piston gasket	NBR	
⑱*	Piston seal		
⑲*	Rod seal		

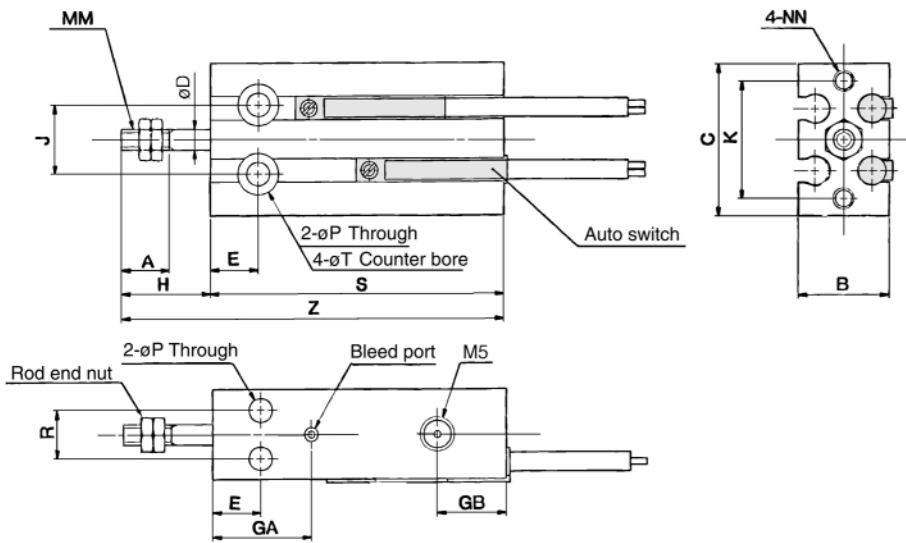
### Replacement Parts

No.	Description	Material	Bore size/Part No.				
			ø10	ø16	ø20	ø25	ø32
⑱*	Piston seal	NBR	MYP-10A	NLP-16L	NLP-20L	NLP-25L	NLP-32L
⑲*	Rod seal		MYR-4	DYR-6K	DYR-8K	DYR-10SK	DYR-12

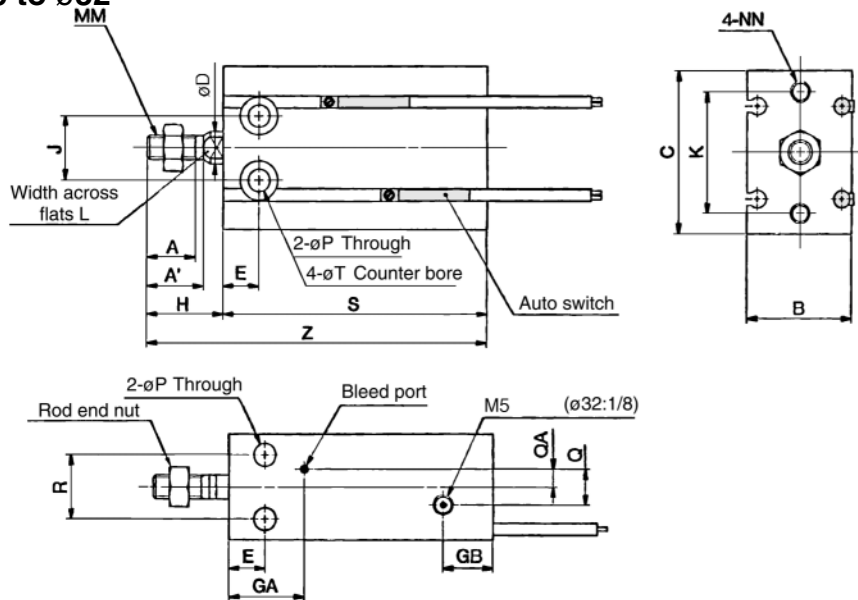
# Free Mount Cylinder/Single Acting Spring Return/Extend *Series CU*

## Dimensions/Single Acting Spring Extend

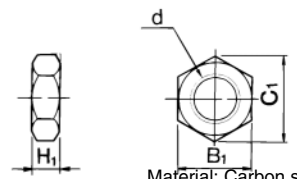
ø6, ø10



ø16 to ø32



### Rod end nut/Options



Material: Carbon steel

Part No.	Tube bore size (mm)	d	H1	B1	C1
NTP-006	6	M3	1.8	5.5	6.4
NTP-010	10	M4	2.4	7	8.1
NTJ-015A	16	M5	4	8	9.2
NT-015A	20	M6	5	10	11.5
NT-02	25	M8	5	13	15.0
NT-03	32	M10 X 1.25	6	17	19.6

CUJ

CU

CQS

CQ2

RQ

MU

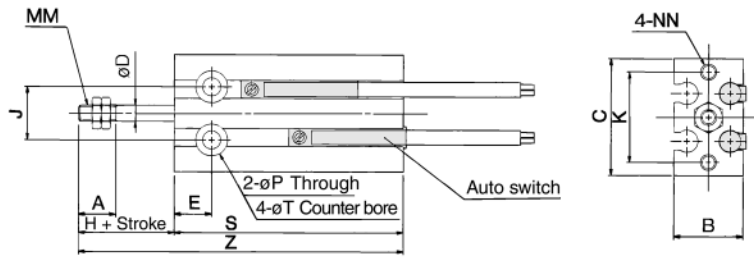
Bore (mm)	(mm)																		
	A	A'	B	C	D	E	GA	GB	H	J	K	L	MM	NN	P	Q	QA	R	T
6	7	-	13	22	3	7	15	10	13	10	17	-	M3	M3 Depth5	3.2	-	-	7	6 Depth4.8
10	10	-	15	24	4	7	16.5	10	16	11	18	-	M4	M3 Depth5	3.2	-	-	9	6 Depth5
16	11	12.5	20	32	6	7	16.5	11.5	16	14	25	5	M5	M4 Depth6	4.5	4	2	12	7.6 Depth6.5
20	12	14	26	40	8	9	19	12.5	19	16	30	6	M6	M5 Depth8	5.5	9	4.5	16	9.3 Depth8
25	15.5	18	32	50	10	10	21.5	13	23	20	38	8	M8	M5 Depth8	5.5	9	4.5	20	9.3 Depth9
32	19.5	22	40	62	12	11	23	12.5	27	24	48	10	M10 X 1.25	M6 Depth9	6.6	13.5	4.5	24	11 Depth11.5

Bore (mm)	Without auto switch						With auto switch					
	S			Z			S			Z		
	5st	10st	15st	5st	10st	15st	5st	10st	15st	5st	10st	15st
6	38	43	48	51	56	61	38	43	48	51	56	61
10	41	46	56	57	62	72	41	46	56	57	62	72
16	35	40	50	51	56	66	45	50	60	61	66	76
20	41	46	56	60	65	75	51	56	66	70	75	85
25	45	50	60	68	73	83	55	60	70	78	83	93
32	47	52	62	74	79	89	57	62	72	84	89	99

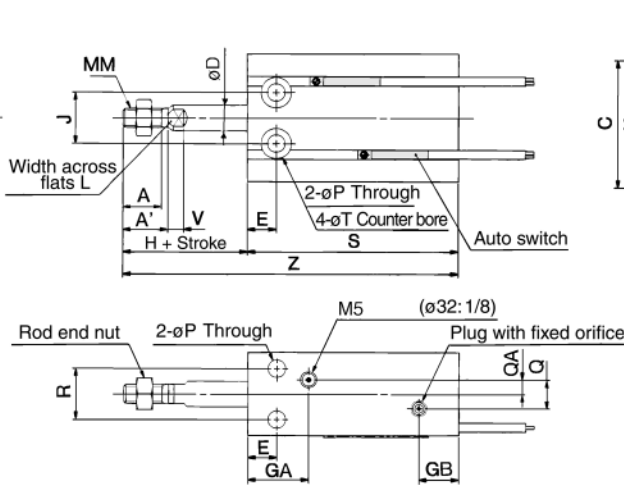
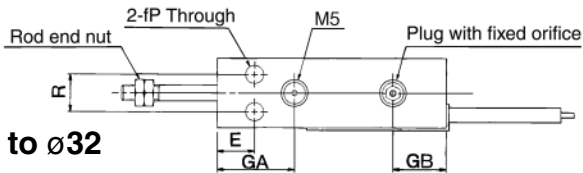
# Series CU

## Dimensions/Single Acting Spring Return

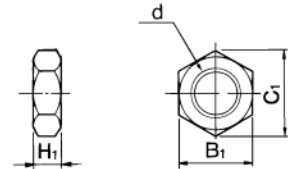
ø6, ø10



ø16 to ø32



### Rod end nut/Options



Material: Carbon steel

Part No.	Tube bore size (mm)	d	H1	B1	C1
NTP-006	6	M3	1.8	5.5	6.4
NTP-010	10	M4	2.4	7	8.1
NTJ-015A	16	M5	4	8	9.2
NT-015A	20	M6	5	10	11.5
NT-02	25	M8	5	13	15.0
NT-03	32	M10 X 1.25	6	17	19.6

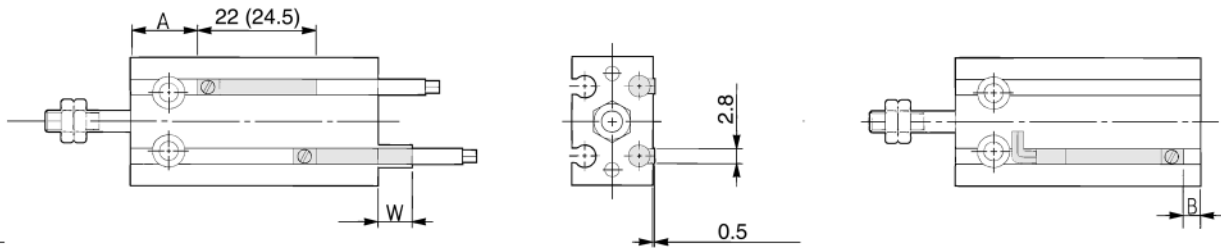
Bore (mm)	(mm)																			
	A	A'	B	C	D	E	GA	GB	H	J	K	L	MM	NN	P	Q	QA	R	T	V
6	7	-	13	22	3	7	15	10	13	10	17	-	M3	M3 Depth5	3.2	-	-	7	6 Depth4.8	-
10	10	-	15	24	4	7	16.5	10	16	11	18	-	M4	M3 Depth5	3.2	-	-	9	6 Depth5	-
16	11	12.5	20	32	6	7	16.5	11.5	16	14	25	5	M5	M4 Depth6	4.5	4	2	12	7.6 Depth6.5	3.5
20	12	14	26	40	8	9	19	12.5	19	16	30	6	M6	M5 Depth8	5.5	9	4.5	16	9.3 Depth8	5
25	15.5	18	32	50	10	10	21.5	13	23	20	38	8	M8	M5 Depth8	5.5	9	4.5	20	9.3 Depth9	5
32	19.5	22	40	62	12	11	23	12.5	27	24	48	10	M10 X 1.25	M6 Depth9	6.6	13.5	4.5	24	11 Depth11.5	5

Bore (mm)	Without auto switch						With auto switch					
	S			Z			S			Z		
	5st	10st	15st	5st	10st	15st	5st	10st	15st	5st	10st	15st
6	38	43	48	56	66	76	38	43	48	56	66	76
10	41	46	56	62	72	87	41	46	56	62	72	87
16	45	50	60	66	76	91	45	50	60	66	76	91
20	41	46	56	65	75	90	51	56	66	75	85	100
25	45	50	60	73	83	98	55	60	70	83	93	108
32	47	52	62	79	89	104	57	62	72	89	99	114

## Auto Switch Mounting Position/Single Acting Spring Return

D-A9□

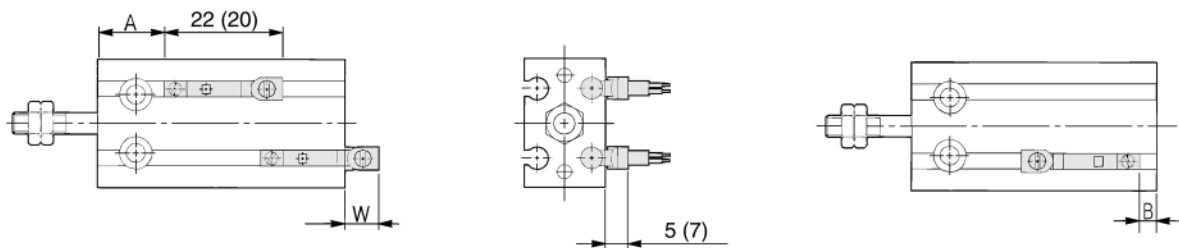
D-F9□



( ) : D-A93

D-A9□V

D-F9□V



( ) : D-F9□V, D-F9□WV

CUJ

CU

CQS

CQ2

RQ

MU

### Single acting/Spring return

(mm)

Bore (mm)	Stroke	D-A9□/D-A9□V			D-F9N/D-F9B/D-F9P/D-F9□W			D-F9□V/D-A9□WV			D-F9BAL		
		A	B	W	A	B	W	A	B	W	A	B	W
6	All stroke	13	0	2.5(5)	17.5	4	6.5	17.5	4	4.5	16.5	3.5	16.5
		10	5, 10	12	3	-1.5(1)	16.5	7.5	2.5	16.5	7.5	0.5	15.5
16	5, 10	15	17		21.5			21.5			20.5		
		15.5	20.5	3.5	-2(0.5)	20	8	2	20	8	0	19	7
20	5, 10	15	20.5		25			25			24		
		19.5	24.5	5.5	-4(-1.5)	24	10	0	24	10	-2	23	9
25	5, 10	22			27.5			27.5			28		
		27	7	-5.5(-3)	32.5	11.5	-1.5	32.5	11.5	-3.5	25.5	10.5	8.5
32	5, 10	23			28.5			28.5			26.5		
		28	8	-6.5(-4)	33.5	12.5	-2.5	33.5	12.5	-4.5	31.5	11.5	7.5



Note 1) Negative figures of the table show dimensions mounted inside cylinder body.

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

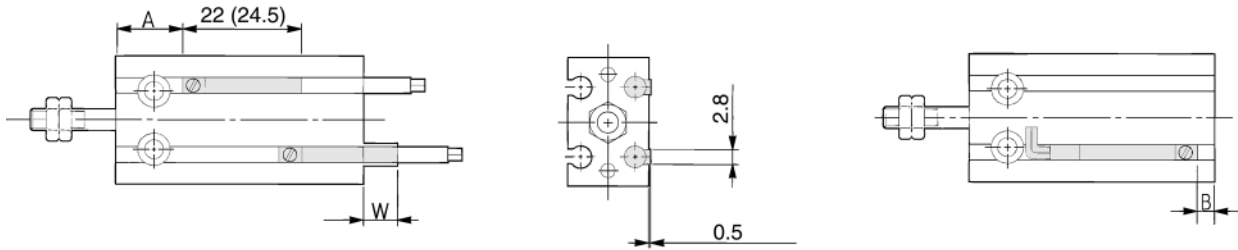
Note 3) Figures in ( ) are for D-A93.

# Series CU

## Auto Switch Mounting Position/Single Acting Spring Extend

D-A9□

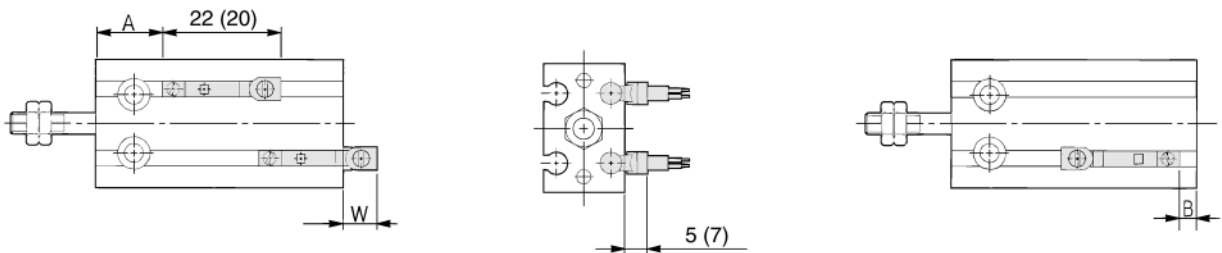
D-F9□



( ) : D-A93

D-A9□V

D-F9□V



( ) : D-F9□V, D-F9□WV

### Single acting/Spring extend

(mm)

Bore (mm)	Stroke	D-A9□/D-A9□V			D-F9ND/D-F9B/D-F9P/D-F9□W			D-F9□V/D-F9□WV			D-F9BAL		
		A	B	W	A	B	W	A	B	W	A	B	W
6	All stroke	11	1	0.5(3)	15.5	5.5	9	15.5	5.5	2.5	14.5	4.5	14.5
		10	5.10 15	12	3 -1.5(1) 8 -6.5(-4)	16.5	7.5 12.5	7 2	16.5	7.5 12.5	0.5 -4.5	15.5	6.5 11.5
16	5.10 15	15.5	3.5 8.5	-2(0.5) -7(-4.5)	20	8 13	6.5 1.5	20	8 13	0 -5	19	7 12	12 7
			20	5.10 15	19.5	5.5 10.5	-4(-1.5) -9(-6.5)	24	10 15	4.5 -0.5	24	10 15	-2 -7
25	5.10 15	22	7 12	-5.5(-3) -10.5(-8)	27.5	11.5 16.5	3 -2	27.5	11.5 16.5	-3.5 -8.5	25.5	10.5 15.5	8.5 3.5
			32	5.10 15	23	8 13	-6.5(-4) -11.5(-9)	28.5	12.5 17.5	2 -3	28.5	12.5 17.5	-4.5 -9.5



Note 1) Negative figures of the table show dimensions mounted inside cylinder body.

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

Note 3) Figures in ( ) are for D-A93.



CUJ

**CU**

CQS

CQ2

RQ

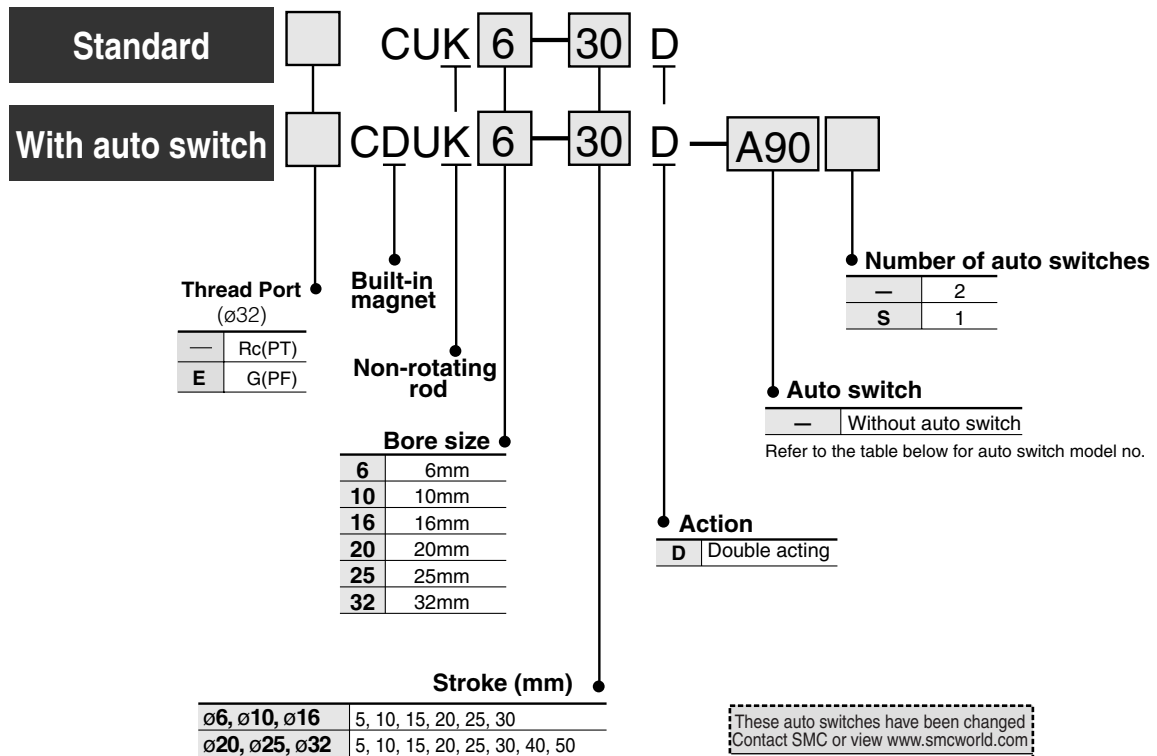
MU

# Free Mount Cylinder/Non-rotating Rod: Double Acting Single Rod

# Series *CUK*

ø6, ø10, ø16, ø20, ø25, ø32

## How to Order



These auto switches have been changed.  
Contact SMC or view [www.smcworld.com](http://www.smcworld.com)

F9N	⇒	M9N	F9NV	⇒	M9NV
F9P	⇒	M9P	F9PV	⇒	M9PV
F9B	⇒	M9B	F9BV	⇒	M9BV

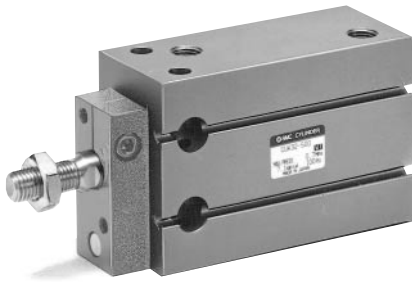
### Applicable Auto Switches/Refer to p.5.3-2 for further information on auto switches.

Style	Special function	Electrical entry	Indicator	Wiring (Output)	Load voltage		Model		Lead wire* (m)			Applicable load		
					DC	AC	Perp.	In-line	0.5 (—)	3 (L)	5 (Z)			
Reed switch	—	Grommet	No	2 wire	24V	5V	≤ 100V	A90V	A90	●	●	—	IC Relay, PLC	
						12V		100V	A93V	A93	●	●		—
			Yes	3 wire (Equiv. NPN)	—	5V	—	A96V	A96	●	●	—		IC
Solid state switch	—	Grommet	Yes	3 wire (NPN)	24V	12V	—	F9NV	F9N	●	●	—	— Relay, PLC	
				3 wire (PNP)				F9PV	F9P	●	●	—		
				2 wire				F9BV	F9B	●	●	—		
	2 wire (NPN)			F9NWV				F9NW	●	●	○			
	2 wire (PNP)			F9PWV				F9PW	●	●	○			
	Diagnostic (2 colour)			Water resistant (2 colour)				2 wire	F9BWV	F9BW	●	●		○
								—	F9BA	—	●	○		

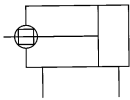
\*Lead wire length 0.5m..... — (Example)A93  
3m..... L (Example)A93L  
5m..... Z (Example)F9NWZ

\*Solid state switches marked with a "○" are manufactured upon receipt of order.

# Free Mount Cylinder/Non-rotating: Double Acting Single Rod *Series CUK*



JIS symbol  
Double acting/Single rod



**Order Made** Made to Order

Refer to p.5.4-1 for made to order specification of CUK series.

## ⚠ Precautions

Be sure to read before handling.  
Refer to p.0-39 to 0-46 for Safety Instructions and common precautions.

### Cautions on Use

## ⚠ Caution

- Do not place your fingers in the clearance between the non-rotating plate and the cylinder tube.

Your fingers could get caught between the non-rotating plate and the cylinder tube when the piston rod retracts. Therefore, never place your finger in this area.

Because the cylinder outputs a great force, it could lead to injury if precautions are not taken to prevent your fingers from getting caught.

- When using the non-rotating style, make sure that rotational torque is not applied to the piston rod. If rotational torque must be applied due to unavoidable circumstances, make sure to use it at the allowable rotational torque or less, which is shown in the table on the right.

## Specifications

Bore size (mm)	ø6	ø10	ø16	ø20	ø25	ø32
Fluid	Air					
Proof pressure	1.05MPa					
Max. operating pressure	0.7MPa					
Min. operating pressure	0.15MPa	0.10MPa		0.08MPa		
Ambient and fluid temperature	Without auto switch: -10°C to 70°C With auto switch : -10°C to 60°C (No freezing)					
Lubrication	Not required (Non-lube)					
Operating piston speed	50 to 500mm/s					
Cushion	Rubber bumper					
Rod end thread	Male thread					
Thread tolerance	JIS class 2					
Stroke tolerance	+1.0mm 0					
Non-rotating accuracy <sup>(1)</sup>	±0.8°					±0.5°

Note 1) No load: at rod extended end

## Standard Stroke

Bore size (mm)	Standard stroke(mm)	Refer to p.2.1-45 for long stroke
ø6, ø10, ø16	5, 10, 15, 20, 25, 30	
ø20, ø25, ø32	5, 10, 15, 20, 25, 30, 40, 50	

## Minimum Strokes for Auto Switch Mounting

Number of auto switches	Applicable auto switch model		
	D-A9□/D-A9□V	D-F9□/D-F9□V	D-F9□W/D-F9□WV D-F9BAL
1	5	5	5
2	10	5	10

## Weight/( ): With D-A90

Bore size (mm)	Stroke(mm)							
	5	10	15	20	25	30	40	50
C(D)UK6-□D	28 (33)	31 (41)	34 (44)	37 (47)	40 (50)	43 (53)	-	-
C(D)UK10-□D	43 (48)	47 (57)	51 (61)	55 (65)	59 (69)	63 (73)	-	-
C(D)UK16-□D	60 (85)	66 (96)	72 (102)	78 (108)	84 (114)	90 (120)	-	-
C(D)UK20-□D	113 (147)	124 (164)	136 (176)	148 (188)	160 (200)	172 (211)	195 (235)	219 (260)
C(D)UK25-□D	212 (266)	229 (288)	246 (305)	263 (322)	280 (339)	297 (356)	335 (390)	370 (424)
C(D)UK32-□D	331 (404)	357 (435)	383 (461)	409 (487)	435 (513)	461 (539)	513 (591)	565 (643)

Refer to p.5.3-75 for auto switch weight.

## Allowable Rotating Torque

Bore size (mm)	ø6	ø10	ø16	ø20	ø25	ø32
Allowable rotating torque (Nm)	0.0015	0.02	0.04	0.10	0.15	0.20

## Tightening Torque

Refer to p.2.1-11 for mounting of CUK series.

## Theoretical Force

Refer to p.2.1-12. Specifications are same as CU series double acting single rod style.

## Auto Switch Mounting Position

Refer to p.2.1-16 for auto switch mounting position of CUK series. Specifications are same as standard double acting single rod type.

CUJ

CU

CQS

CQ2

RQ

MU

# Series CUK

## Copper Free

20-CUK **Bore size** — **Stroke** D

### Copper free

To prevent the generation of copper ions in order to eliminate any influences of copper ions or fluororesins on colour CRTs, copper materials have been electroless nickel plated or replaced with non-copper materials.

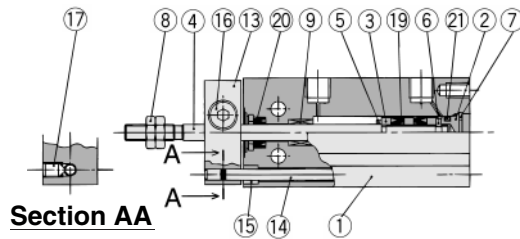
### Min. Operating Pressure

(MPa)

Bore size(mm)	ø6	ø10, ø16	ø20, ø25, ø32
Min. operating press.	0.15	0.10	0.08

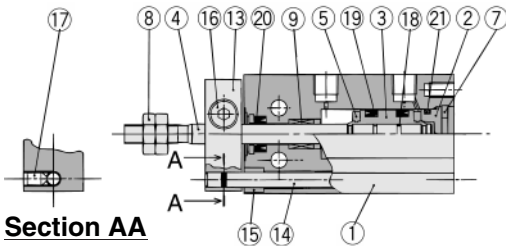
## Construction

ø6



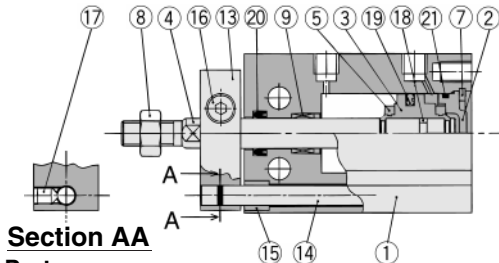
Section AA

ø10



Section AA

ø16 to ø32

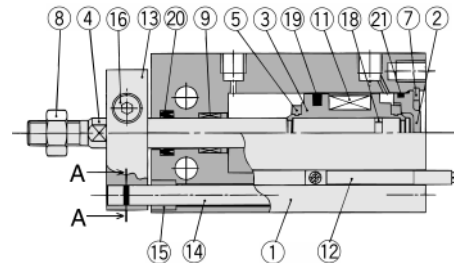
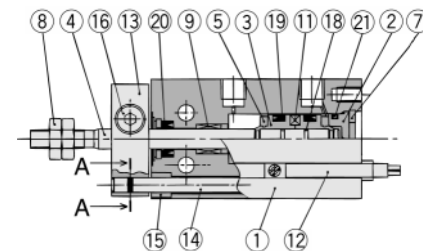
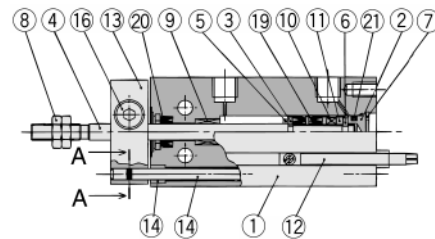


Section AA

## Specifications

Action	Double acting single rod style
Bore size (mm)	ø6, ø10, ø16, ø20, ø25, ø32
Max. operating pressure	1.05MPa
Cushion	Rubber bumper
Stroke	Same as standard model (Refer to p.2.1-32.)
Auto switch	Attachable

### With auto switch



### Component Parts

No.	Description	Material	Note
①	Cylinder tube	Aluminum alloy	Hard anodized
②	Head cover	Brass	ø6 to ø10, Electroless nickel plated
		Aluminum alloy	ø16 to ø32, White chromated
③	Piston	Brass	ø6 to ø10,
		Aluminum alloy	ø16 to ø32, Chromated
④	Piston rod	Stainless steel	
⑤	Bumper A	Urethane	
⑥	Bumper B	Urethane	
⑦	Snap ring	Carbon tool steel	Phosphate coating
⑧	Rod end nut	Carbon steel	Nickel plated
⑨	Bushing	Oil impregnated sintered alloy	
⑩	Magnet holder	Brass	ø6

No.	Description	Material	Note
⑪	Magnet	Magnet material	
⑫	Auto switch		
⑬	Non-rotating plate	Aluminum alloy	Nickel plated
⑭	Guide rod	Stainless steel	
⑮	Bushing	Oil impregnated sintered alloy	
⑯	Hex. socket head cap screw	Carbon steel	Black zinc chromated
⑰	Hex. socket head cap snap ring	Carbon steel	Black zinc chromated
⑱	Piston gasket	NBR	
⑲*	Piston seal		
⑳*	Rod seal		
㉑*	Gasket		

### Replacment Parts: Seal Kits

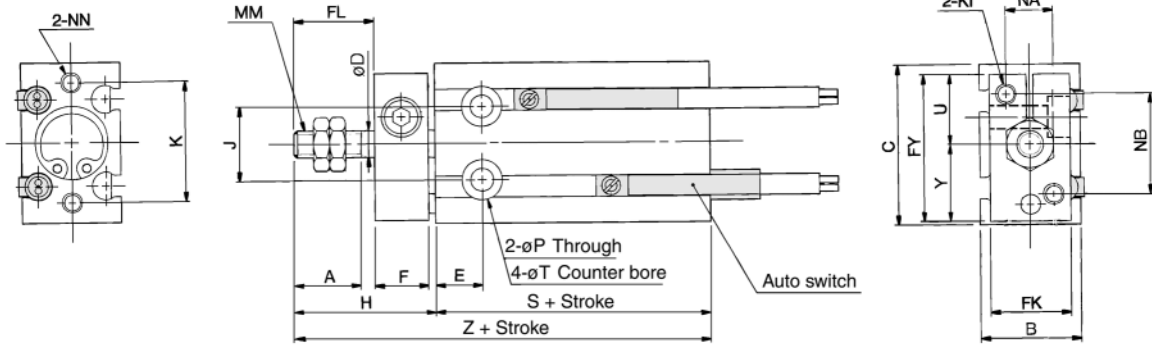
Bore size (mm)	Kits No.	Contents
ø10	CU10D-PS	Kits include items ⑱, ⑳ and ㉑ from the table above.
ø16	CU16D-PS	
ø20	CU20D-PS	
ø25	CU25D-PS	
ø32	CU32D-PS	

Seal kits consist of items ⑱, ⑳ and ㉑ contained in one kit, and can be ordered using the order number for each respective tube bore size.

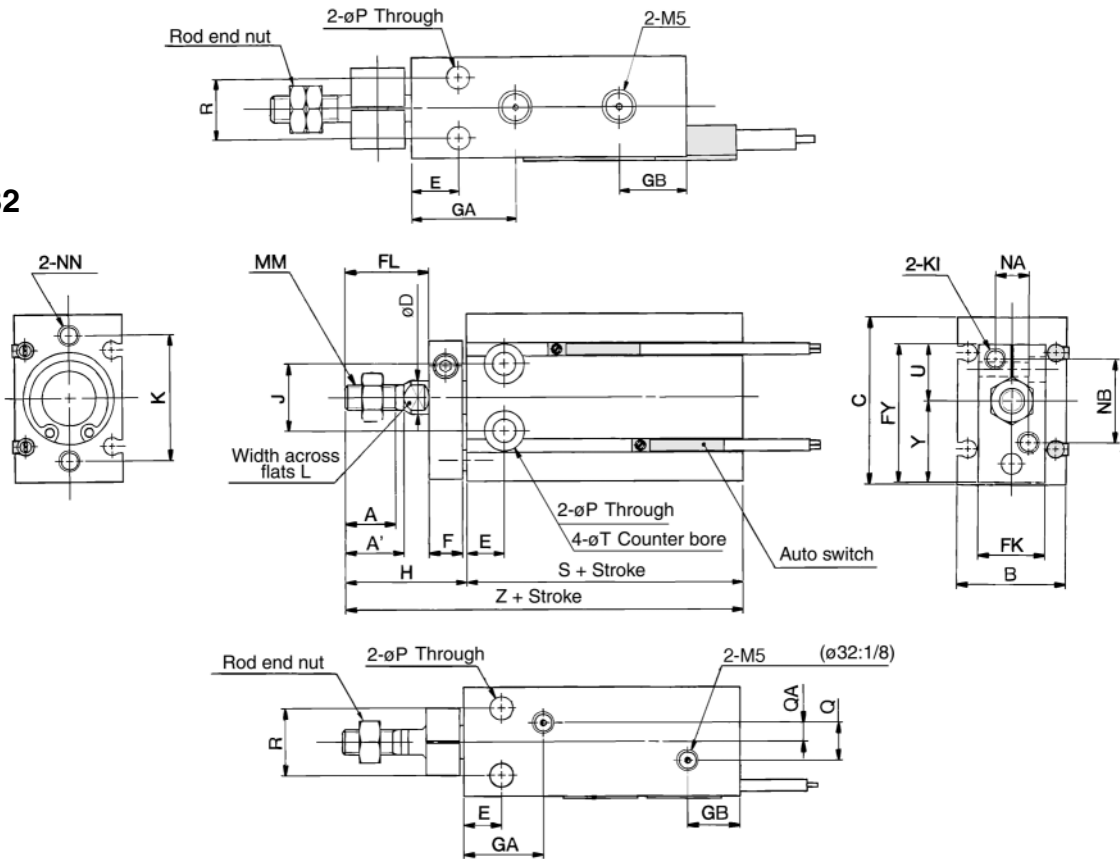
# Free Mount Cylinder/Non-rotating Rod: Double Acting Single Rod *Series CUK*

## Dimensions/Non-rotating Rod: Double Acting Single Rod

ø6, ø10

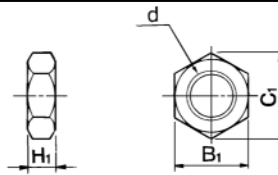


ø16 to ø32



### Rod end nut/Options

Material: Carbon steel



Part No.	Tube bore size (mm)	d	H1	B1	C1
NTP-006	6	M3	1.8	5.5	6.4
NTP-010	10	M4	2.4	7	8.1
NTJ-015A	16	M5	4	8	9.2
NT-015A	20	M6	5	10	11.5
NT-02	25	M8	5	13	15.0
NT-03	32	M10 X 1.25	6	17	19.6

(mm)

Bore (mm)	A	A'	B	C	D	E	F	FL	FK	FY	GA	GB	H	J	K	KI	L	MM
6	7	-	13	22	3	7	8	9	11	20.5	15	10	18	10	17	M3	-	M3
10	10	-	15	24	4	7	8	12	12	22	16.5	10	21	11	18	M3	-	M4
16	11	12.5	20	32	6	7	8	17	13	28	16.5 <sup>(1)</sup>	11.5	26	14	25	M4	5	M5
20	12	14	26	40	8	9	8	20	16	33	19	12.5	29	16	30	M4	6	M6
25	15.5	18	32	50	10	10	10	22	20	43.5	21.5	13	33	20	38	M5	8	M8
32	19.5	22	40	62	12	11	12	29	24	51.5	23	12.5	42	24	48	M5	10	M10 X 1.25

Bore (mm)	NA	NB	NN	P	Q	QA	R	T	U	Y	W/o auto switch		W/ auto switch	
											S	Z	S	Z
6	6	14	M3 Depth5	3.2	-	-	7	6 Depth4.8	10	10.5	33	51	33	51
10	7	15	M3 Depth5	3.2	-	-	9	6 Depth5	10.5	11.5	36	57	36	57
16	6	18	M4 Depth6	4.5	4	2	12	7.6 Depth6.5	12.5	15.5	30	56	40	66
20	8	20	M5 Depth8	5.5	9	4.5	16	9.3 Depth8	13.5	19.5	36	65	46	75
25	10	28	M5 Depth8	5.5	9	4.5	20	9.3 Depth9	19	24.5	40	73	50	83
32	12	32	M6 Depth9	6.6	13.5	4.5	24	11 Depth11.5	21	30.5	42	84	52	94

Note 1) 5 stroke (CUK16-5D): GA=14.5

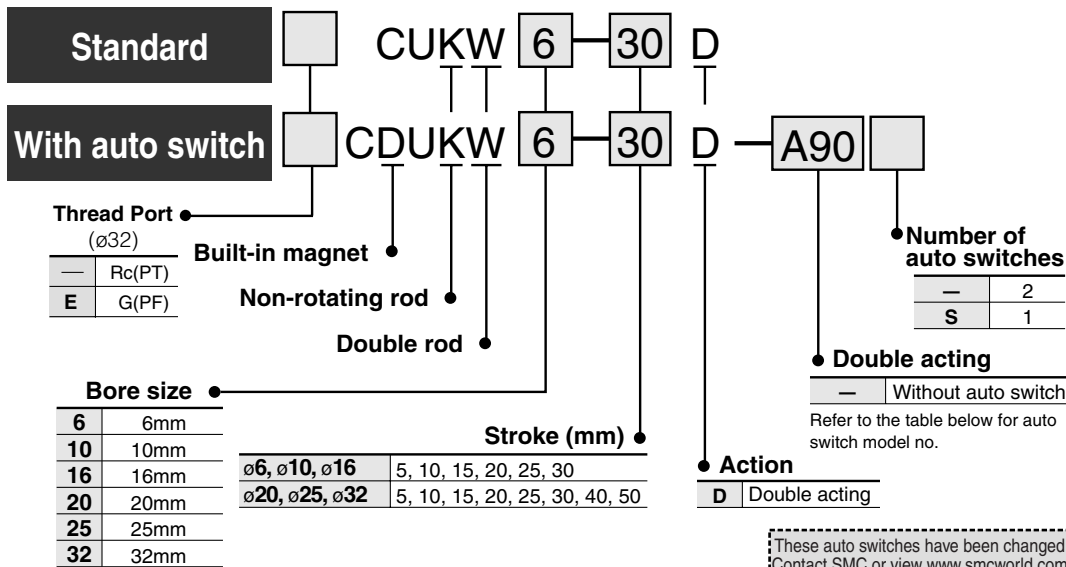
- CUJ
- CU
- CQS
- CQ2
- RQ
- MU

# Free Mount Cylinder/Non-rotating Rod: Double Acting Double Rod

# Series **CUKW**

ø6, ø10, ø16, ø20, ø25, ø32

## How to Order



These auto switches have been changed.  
Contact SMC or view [www.smcworld.com](http://www.smcworld.com)

F9N	→	M9N	F9NV	→	M9NV
F9P	→	M9P	F9PV	→	M9PV
F9B	→	M9B	F9BV	→	M9BV

### Applicable Auto Switches/Refer to p.5.3-2 for further information on auto switches.

Style	Special function	Indicator	Indicator	Wiring (Output)	Load voltage		Model		Lead wire (m)*			Applicable load	
					DC	AC	Perp.	In-line	0.5 (—)	3 (L)	5 (Z)		
Reed switch	—	Grommet	No	2 wire	24V	5V	≤ 100V	A90V	A90	●	●	—	IC
			Yes			12V		100V	A93V	A93	●	●	
			Yes	3 wire (Equiv. NPN)	—	5V	—	A96V	A96	●	●	—	IC
Solid state switch	—	Grommet	Yes	3 wire (NPN)	24V	12V	—	F9NV	F9N	●	●	—	Relay, PLC
				3 wire (PNP)				F9PV	F9P	●	●	—	
				2 wire				F9BV	F9B	●	●	—	
	3 wire (NPN)			F9NWV				F9NW	●	●	○		
	3 wire (PNP)			F9PWV				F9PW	●	●	○		
	2 wire			F9BWW				F9BW	●	●	○		
	—			F9BA				—	●	○	○		
Diagnostic (2 colour)	Water resistant (2 colour)	Grommet	Yes	2 wire	24V	12V	—	—	F9BA	—	●	○	Relay, PLC

\*Lead wire length 0.5m..... (Example) A93 5m..... Z (Example) F9NWZ  
3m..... L (Example) A93L

\*Solid state switches marked with a "○" are manufactured upon receipt of order.

# Free Mount Cylinder/Non-rotating Rod: Double Acting Double Rod *Series CUKW*



## Specifications

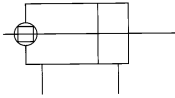
Bore size (mm)	ø6	ø10	ø16	ø20	ø25	ø32
Fluid	Air					
Proof pressure	1.05MPa					
Max. operating pressure	0.7MPa					
Min. operating pressure	0.18MPa	0.13MPa		0.11MPa		
Ambient and fluid temperature	Without auto switch: -10°C to 70°C With auto switch : -10°C to 60°C (No freezing)					
Lubrication	Not required (Non-lube)					
Operating piston speed	50 to 500 mm/s					
Cushion	Rubber bumper					
Rod end thread	Male thread					
Thread tolerance	JIS class 2					
Stroke tolerance	+10 0 mm					
Non-rotating accuracy <sup>(1)</sup>	±0.8°			±0.5°		

Note 1) No load: Non-rotating plate side at rod extended end

## Standard Stroke

Bore size (mm)	Standard stroke (mm)
ø6, ø10, ø16	5, 10, 15, 20, 25, 30
ø20, ø25, ø32	5, 10, 15, 20, 25, 30, 40, 50

JIS symbol  
Non-rotating rod



## Minimum Strokes for Auto Switch Mounting

Number of auto switches	Applicable auto switch model		
	D-A9□/D-A9□V	D-F9□/D-F9□V	D-F9□W/D-F9□WV D-F9BAL
1	5	5	5
2	10	5	10

## Order Made Made to Order

Refer to p.5.4-1 for made to order specification of CUKW series.

## ⚠ Precautions

Be sure to read before handling.  
Refer to p.0-39 to 0-46 for Safety Instructions and common precautions.

## Weight/( ): With D-A90

Model	Stroke (mm)							
	5	10	15	20	25	30	40	50
C(D)UKW6-□D	33 (38)	36 (46)	40 (50)	43 (53)	46 (56)	50 (60)	-	-
C(D)UKW10-□D	51 (56)	56 (66)	60 (70)	65 (75)	69 (79)	74 (84)	-	-
C(D)UKW16-□D	84 (109)	91 (121)	98 (128)	105 (135)	112 (142)	119 (149)	-	-
C(D)UKW20-□D	150 (185)	163 (203)	177 (217)	191 (231)	205 (245)	219 (259)	246 (286)	275 (315)
C(D)UKW25-□D	276 (330)	296 (355)	316 (375)	336 (395)	357 (416)	377 (436)	421 (476)	462 (516)
C(D)UKW32-□D	434 (507)	465 (543)	495 (573)	526 (604)	556 (634)	587 (665)	669 (747)	709 (787)

Refer to p.5.3-75 for auto switch weight.

## Auto Switch Mounting Position

Refer to p.2.1-21 for auto switch mounting position of CUKW series. The specifications are same as double acting double rod style.

## Theoretical Force

Refer to p.2.1-18. The specifications are same as double acting double rod style (CUW series).

## Tightening Torque

Refer to p.2.1-11 for mounting of CUKW series.

## Allowable Rotating Torque

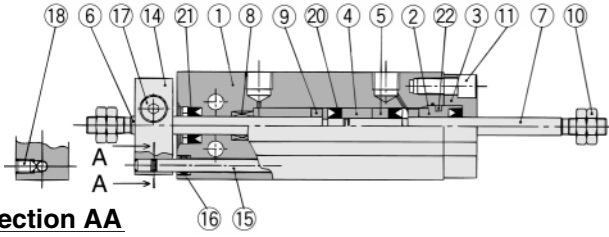
Make sure that rotational torque is not applied to the piston rod of the CUKW series cylinder. If rotational torque must be applied due to unavoidable circumstances, refer to p.2.1-32.



# Series CUKW

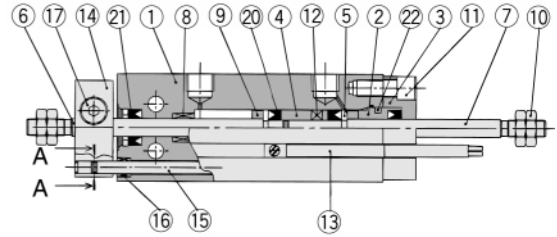
## Construction

ø6

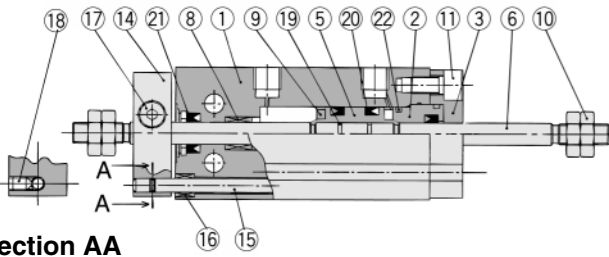


Section AA

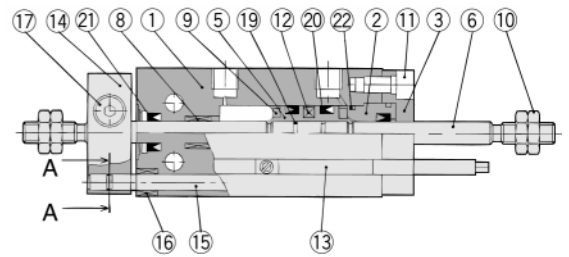
With auto switch



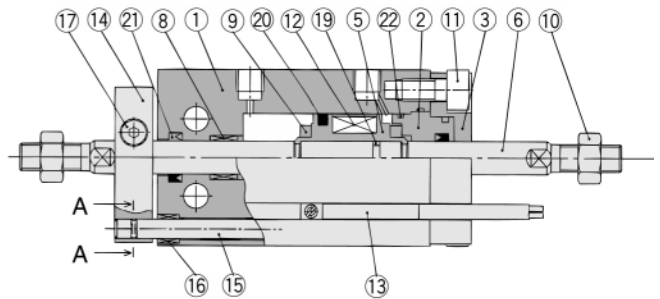
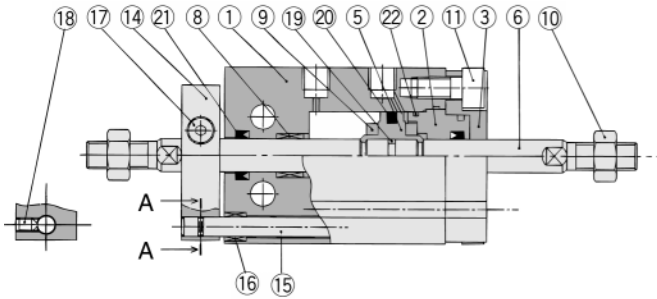
ø10



Section AA



ø16 to ø32



### Component Parts

No.	Description	Material	Note
①	Cylinder	Aluminum alloy	Hard anodized
②	Rod cover	Aluminum bearing alloy	Chromated
③	Rod cover retainer	Aluminum alloy	Hard anodized
④	Piston	Brass	ø6
⑤	Piston	Brass	ø6, ø10
		Aluminum alloy	ø16 to ø32, Chromated
⑥	Piston rod	Stainless steel	
⑦	Piston rod	Stainless steel	ø6
⑧	Bushing	Oil impregnated sintered alloy	
⑨	Bumper	Urethane	
⑩	Rod end nut	Carbon steel	Nickel plated
⑪	Hex. socket head cap screw	Carbon steel	Nickel plated

No.	Description	Material	Note
⑫	Magnet	Magnet material	
⑬	Auto switch		
⑭	Non-rotating plate	Magnet material	Nickel plated
⑮	Guide rod	Stainless steel	
⑯	Bushing	Oil impregnated sintered alloy	
⑰	Hex. socket head cap screw	Carbon steel	Black zinc chromated
⑱	Hex. socket head snap ring	Carbon steel	Black zinc chromated
⑲	Piston gasket	NBR	
⑳	Piston seal		
㉑	Rod seal		
㉒	Gasket		

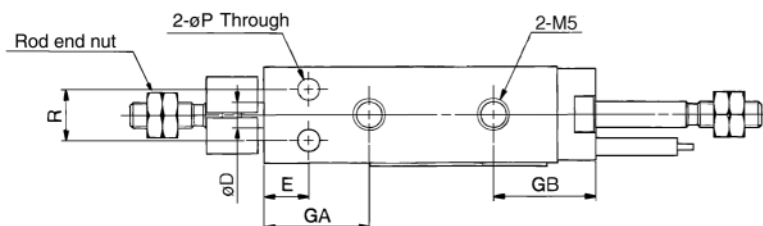
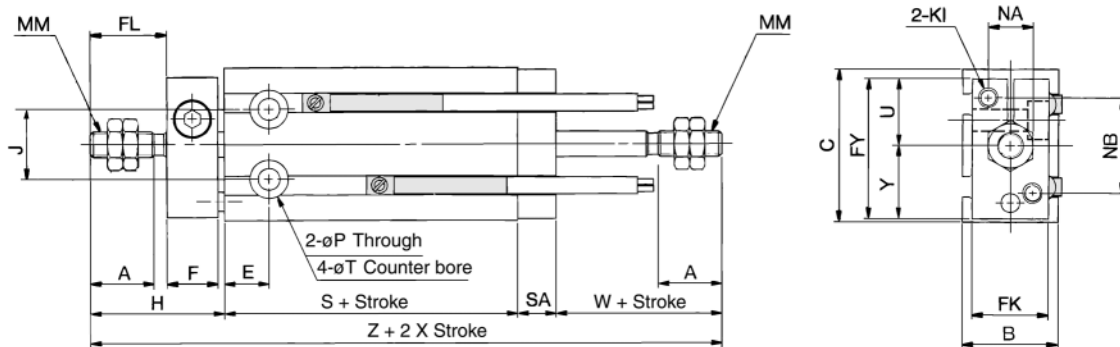
### Replacement Parts

No.	Description	Material	Bore size/Part No.					
			ø6	ø10	ø16	ø20	ø25	ø32
⑳	Piston seal	NBR	MYP-6A	MYP-10A	PPD-16	PPD-20	PPD-25	PPD-32
㉑	Rod seal		MYR-3	MYR-4	DYR-6K	DYR-8K	DYR-10SK	DYR-12
㉒	Gasket		ø7 X ø5 X ø1	ø10 X ø8 X ø1	ø16 X ø14 X ø1	C18	C22	C29

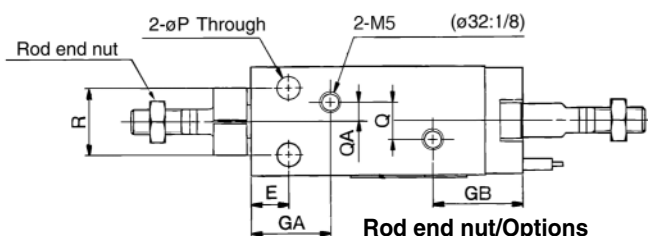
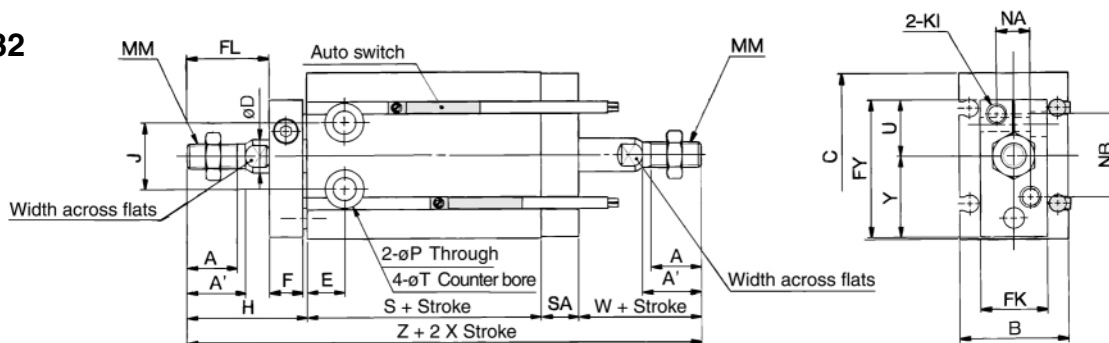
# Free Mount Cylinder/Non-rotating Rod: Double Acting Double Rod *Series CUKW*

## Dimensions/Non-rotating Rod: Double Acting Double Rod

ø6, ø10

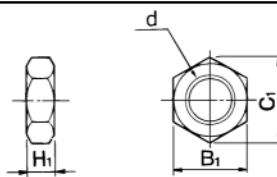


ø16 to ø32



Rod end nut/Options

Material: Carbon steel



Part No.	Tube bore size (mm)	d	H1	B1	C1
NTP-006	6	M3	1.8	5.5	6.4
NTP-010	10	M4	2.4	7	8.1
NTJ-015A	16	M5	4	8	9.2
NT-015A	20	M6	5	10	11.5
NT-02	25	M8	5	13	15.0
NT-03	32	M10 X 1.25	6	17	19.6

Bore (mm)	A	A'	B	C	D	E	F	FL	FK	FY	GA	GB	H	J	KI	L	MM	NA
6	7	-	13	22	3	7	8	9	11	20.5	15	16	18	10	M3	-	M3	6
10	10	-	15	24	4	7	8	12	12	22	16.5	16	21	11	M3	-	M4	7
16	11	12.5	20	32	6	7	8	17	13	28	16.5 <sup>(1)</sup>	19	26	14	M4	5	M5	6
20	12	14	26	40	8	9	8	20	16	33	19	21.5	29	16	M4	6	M6	8
25	15.5	18	32	50	10	10	10	22	20	43.5	21.5	22	33	20	M5	8	M8	10
32	19.5	22	40	62	12	11	12	29	24	51.5	23	22.5	42	24	M5	10	M10 X 1.25	12

Bore (mm)	NB	P	Q	QA	R	SA	T	U	W	Y	W/o auto switch		W/ auto switch	
											S	Z	S	Z
6	14	3.2	-	-	7	6	6 Depth4.8	10	13	10.5	38	75	38	75
10	15	3.2	-	-	9	6	6 Depth5	10.5	16	11.5	36	79	36	79
16	18	4.5	4	2	12	7.5	7.6 Depth6.5	12.5	16	15.5	30	79.5	40	89.5
20	20	5.5	9	4.5	16	9	9.3 Depth8	13.5	19	19.5	36	93	46	103
25	28	5.5	9	4.5	20	9	9.3 Depth9	19	23	24.5	40	105	50	115
32	32	6.6	13.5	4.5	24	10	11 Depth11.5	21	27	30.5	42	121	52	131

Note 1) 5 stroke (CUKW16-5D): GA=14.5



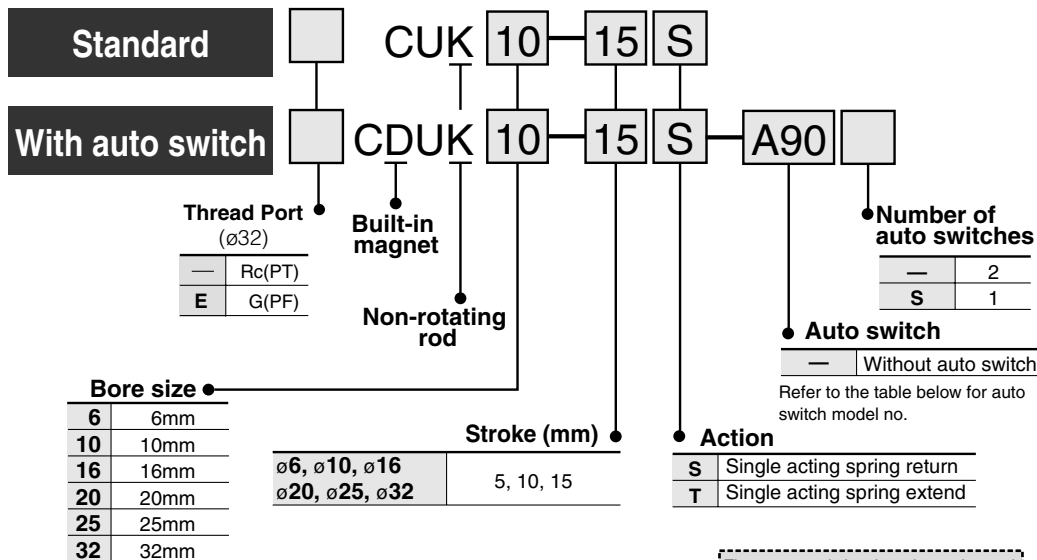
- CUJ
- CU
- CQS
- CQ2
- RQ
- MU

# Free Mount Cylinder/Non-rotating Rod: Single Acting Spring Return/Extend

## Series *CUK*

ø6, ø10, ø16, ø20, ø25, ø32

### How to Order



These auto switches have been changed  
Contact SMC or view [www.smcworld.com](http://www.smcworld.com)

F9N→M9N    F9NV→M9NV  
F9P→M9P    F9PV→M9PV  
F9B→M9B    F9BV→M9BV

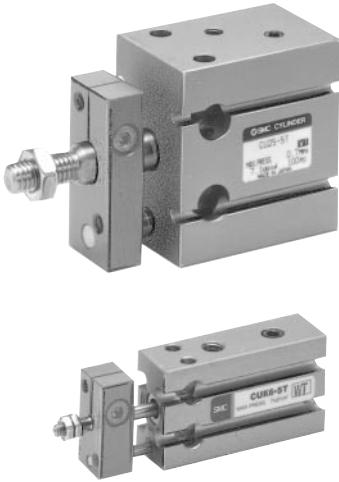
#### Applicable Auto switches/Refer to p.5.3-2 for further information on auto switches.

Style	Special function	Electrical entry	Indicator	Wiring (Output)	Load voltage		Model		Lead wire (m)*			Applicable load	
					DC	AC	Perp.	In-line	0.5 (-)	3 (L)	5 (Z)		
Reed switch	—	Grommet	No	2 wire	24V	5V	≤ 100V	A90V	A90	●	●	—	IC
			Yes			12V		100V	A93V	A93	●	●	
			Yes	3 wire (Equiv. NPN)	—	5V	—	A96V	A96	●	●	—	IC
Solid state switch	—	Grommet	Yes	3 wire (NPN)	24V	12V	—	F9NV	F9N	●	●	—	Relay, PLC
				3 wire (PNP)				F9PV	F9P	●	●	—	
				2 wire				F9BV	F9B	●	●	—	
				3 wire (NPN)				F9NWV	F9NW	●	●	○	
	3 wire (PNP)			F9P WV				F9PW	●	●	○		
	Diagnostic (2 colour)			2 wire				F9BWV	F9BW	●	●	○	
								—	F9BA	—	●	○	

\*Lead wire length 0.5m..... — (Example) A93 5m..... Z (Example) F9NWZ  
3m..... L (Example) A93L

\*Solid state switches marked with a "○" are manufactured upon receipt of order.

# Free Mount Cylinder/Non-rotating Rod: Single Acting Spring Return/Extend *Series CUK*



## Specifications

Bore size (mm)	ø6	ø10	ø16	ø20	ø25	ø32
Fluid	Air					
Proof pressure	1.05MPa					
Max. operating pressure	0.7MPa					
Min. operating pressure	0.23MPa	0.18MPa		0.16MPa		
Ambient and fluid temperature	Without auto switch -10°C to 70°C With auto switch -10°C to 60°C (No freezing)					
Lubrication	Not required (Non-lube)					
Operating piston speed	50 to 500mm/s					
Cushion (1)	Rubber bumper					
Rod end thread	Male thread					
Thread tolerance	JIS class 2					
Stroke tolerance	+10 0 mm					
Rod non rotating accuracy (2)	±0.8°					±0.5°

Note 1) ø6: With auto switch, single rubber bumper

Note 2) No load: at extended end

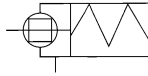
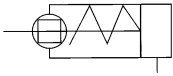
## Standard Stroke

Bore size (mm)	Standard stroke (mm)
ø6, ø10, ø16, ø20, ø25, ø32	5, 10, 15

JIS symbol

Single acting/  
Spring return

Single acting/  
Spring extend



## Minimum Stroke for Auto Switch Mounting

Number of auto switches	Applicable auto switch model		
	D-A9□/D-A9□V	D-F9□/D-F9□V	D-F9□W/D-F9□WV D-F9BAL
1	5	5	5
2	10	5	10

Weight/( ): With D-A90

Unit: g

Model	Stroke (mm)		
	5	10	15
C(D)UK6-□ S T	28 (33)	31 (41)	34 (44)
C(D)UK10-□ S T	43 (48)	47 (57)	55 (65)
C(D)UK16-□ S T	60 (85)	66 (90)	81 (111)
C(D)UK20-□ S T	113 (147)	124 (164)	153 (193)
C(D)UK25-□ S T	212 (266)	229 (288)	271 (330)
C(D)UK32-□ S T	331 (404)	357 (435)	422 (500)

Refer to p.5.3-75 for auto switch weight.



Made to Order

Refer to p.5.4-1 for Made to Order specifications.



## Precautions

Be sure to read before handling.  
Refer to p.0-39 to 0-46 for Safety Instructions and common precautions.

## Tightening Torque

Refer to p.2.1-11 for mounting of CUK series single acting style.

## Theoretical Force

Refer to p.2.1-23. Specifications are same as single acting/spring return and extend style (CU series).

## Auto Switch Mounting Position

Refer to p.2.1-28 and 2.1-29. Auto switch mounting position of single acting: spring return and extend style of CDUK series is same as single acting: standard spring return and extend styles.

## Allowable Tightening Torque

Make sure that rotational torque is not applied to the piston rod of the CUK series single acting type cylinder. If rotational torque must be applied due to unavoidable circumstances, refer to p.2.1-32.

CUJ

CU

CQS

CQ2

RQ

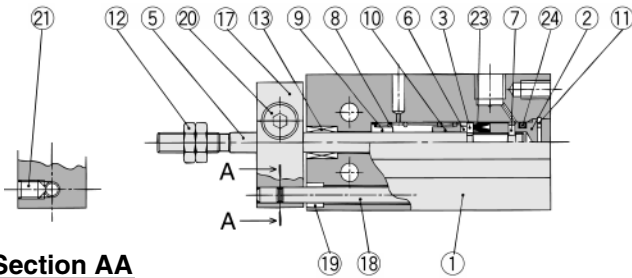
MU

# Series CUK

## Construction

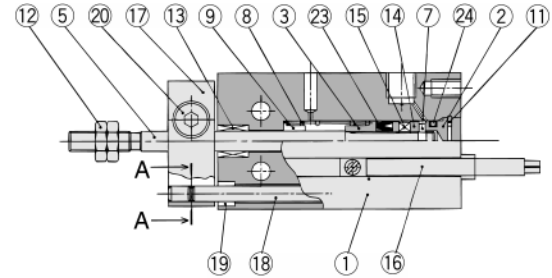
### Single acting/Spring return

ø6

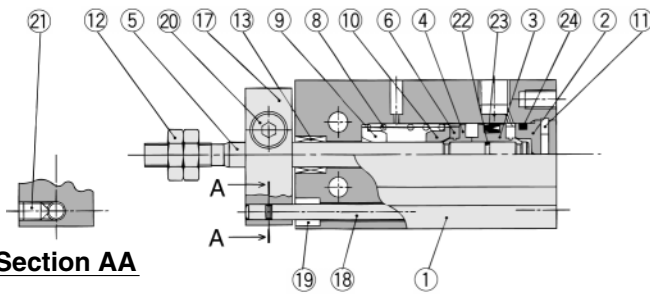


Section AA

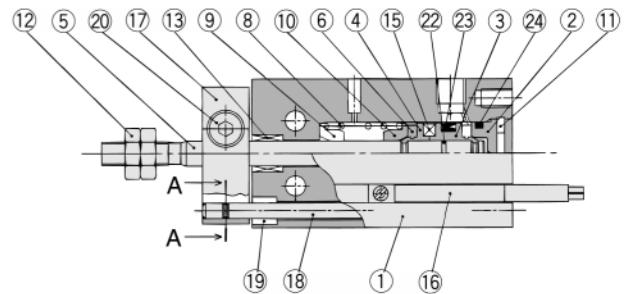
### With auto switch



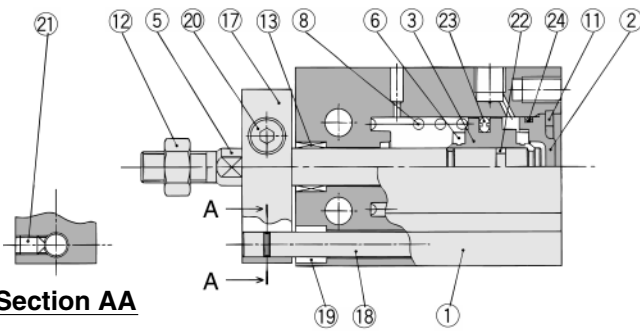
ø10



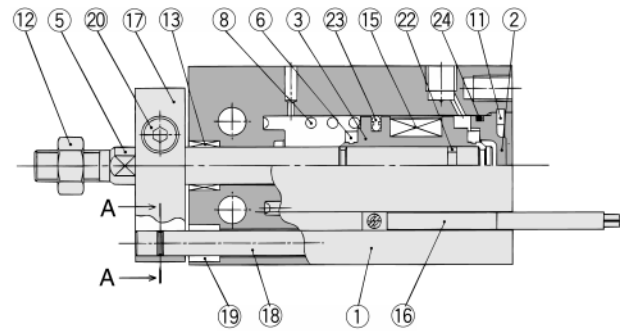
Section AA



ø16 to ø32



Section AA



### Component Parts

No.	Description	Material	Note
①	Cylinder tube	Aluminum alloy	Hard anodized
②	Head cover	Brass	ø6 to ø10, Electroless nickel plated
		Aluminum alloy	ø16 to ø32, White chromated
③	Piston	Brass	ø6 to ø10
		Aluminum alloy	ø16 to ø32, Chromated
④	Piston	Brass	ø10
⑤	Piston rod	Stainless steel	
⑥	Bumper A	Urethane	
⑦	Bumper B	Urethane	
⑧	Return spring	Piano wire	Zinc chromated
⑨	Spring seat	Brass	
⑩	Spring seat	Brass	

No.	Description	Material	Note
⑪	Snap ring	Carbon tool steel	Phosphate coating
⑫	Rod end nut	Carbon steel	Nickel plated
⑬	Bushing	Oil impregnated sintered alloy	
⑭	Magnet holder	Brass	ø6
⑮	Magnet	Magnet material	
⑯	Auto switch		
⑰	Non-rotating plate	Aluminum alloy	Nickel plated
⑱	Guide rod	Stainless steel	
⑲	Bushing	Oil impregnated sintered alloy	
⑳	Hex. socket head cap screw	Carbon steel	Black zinc anodized
㉑	Hex. socket head snap ring	Carbon steel	Black zinc anodized
㉒	Piston gasket	NBR	
㉓*	Piston seal		
㉔*	Gasket		

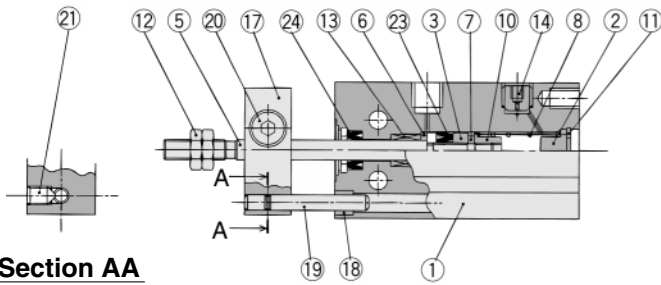
### Replacement Parts

No.	Description	Material	Bore size/Part No.				
			ø10	ø16	ø20	ø25	ø32
㉓*	Piston seal	NBR	MYP-10A	NLP-16L	NLP-20L	NLP-25L	NLP-32L
㉔*	Gasket		ø10 X ø8 X ø1	ø16 X ø14 X ø1	C18	C22	C29

## Construction

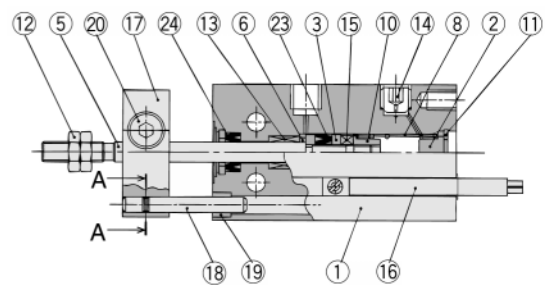
### Single acting/Spring extend

ø6

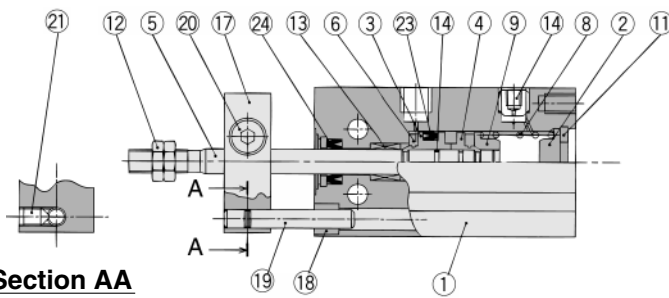


Section AA

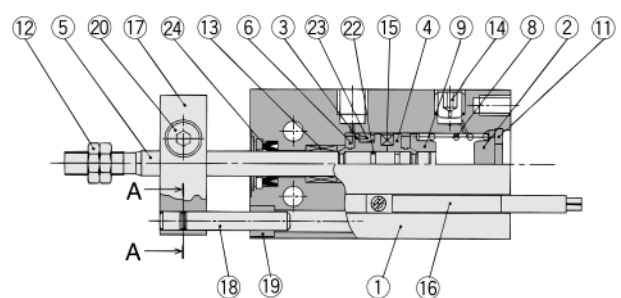
### With auto switch



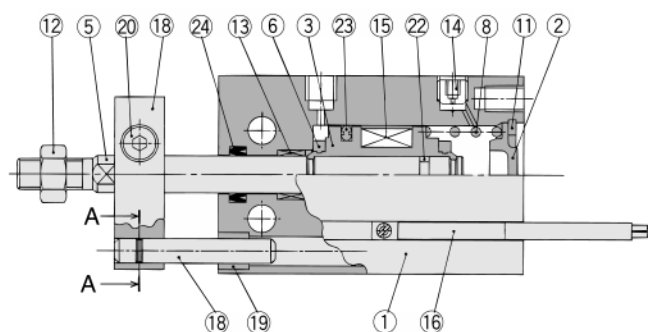
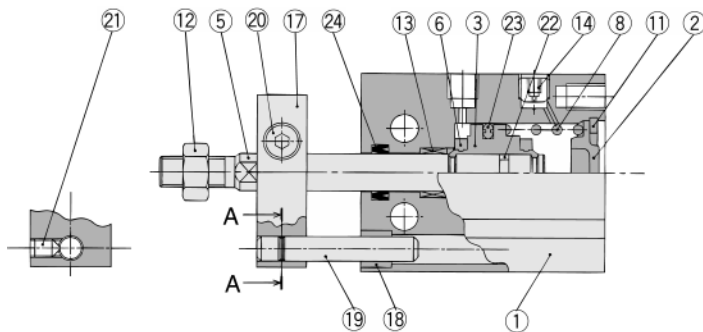
ø10



Section AA



ø16 to 32



### Component Parts

No.	Description	Material	Note
①	Cylinder tube	Aluminum alloy	Hard anodized
②	Head cover	Brass	ø6 to ø10, nickel plated
		Aluminum alloy	ø16 to ø32, White chromated
③	Piston	Brass	ø6 to ø10
		Aluminum alloy	ø16 to ø32, Chromated
④	Piston	Brass	ø10
⑤	Piston rod	Stainless steel	
⑥	Bumper A	Urethane	
⑦	Bumper B	Urethane	
⑧	Return spring	Piano wire	Zinc chromated
⑨	Spring seat	Brass	
⑩	Stopper	Brass	ø6
⑪	Snap ring	Carbon tool steel	Phosphate coating

No.	Description	Material	Note
⑫	Rod end nut	Carbon steel	Nickel plated
⑬	Bushing	Oil impregnated sintered alloy	
⑭	Plug with fixed orifice	Alloy steel	Black zinc chromated
⑮	Magnet	Magnet material	
⑯	Auto switch		
⑰	Non-rotating plate	Aluminum alloy	Black anodized
⑱	Guide rod	Stainless steel	
⑲	Bushing	Oil impregnated sintered alloy	
⑳	Hex. socket head cap screw	Carbon steel	Black zinc chromated
㉑	Hex. socket head snap ring	Carbon steel	Black zinc chromated
㉒	Piston gasket	NBR	
㉓*	Piston seal		
㉔*	Gasket		

### Replacement Parts

No.	Description	Material	Bore size/Part No.				
			ø10	ø16	ø20	ø25	ø32
㉓*	Piston seal	NBR	MYP-10A	NLP-16L	NLP-20L	NLP-25L	NLP-32L
㉔*	Gasket		MYR-4	DYR-6K	DYR-8K	DYR-10SK	DYR-12

\* Consult SMC when seals of ø6 are replaced.

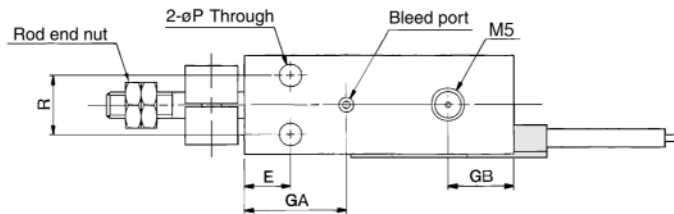
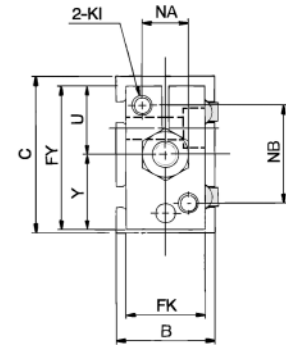
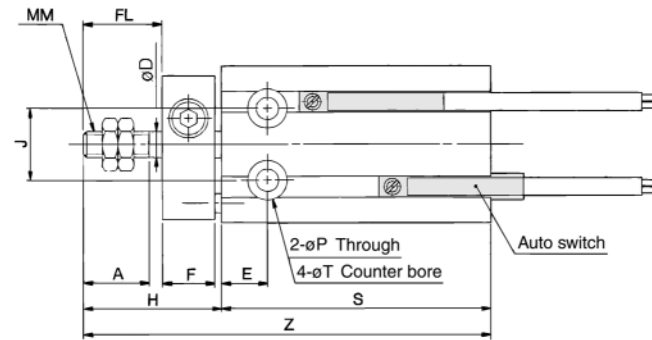
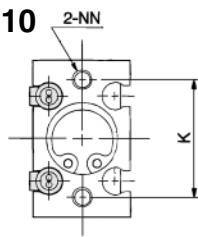
CUJ  
CU  
CQS  
CQ2  
RQ  
MU



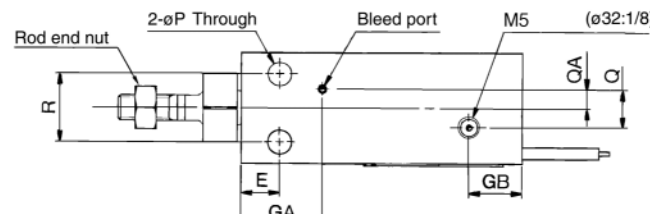
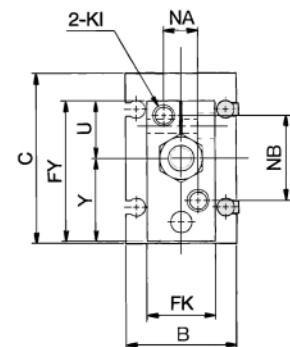
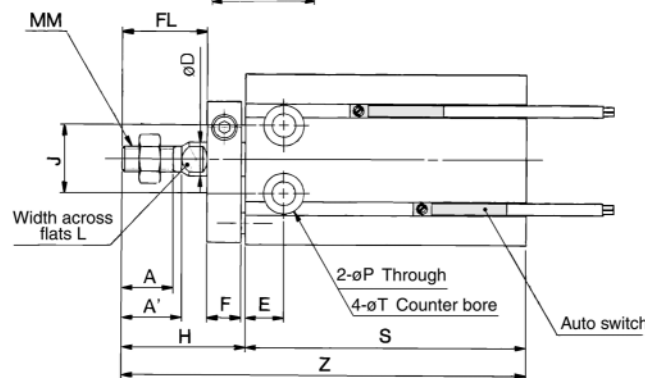
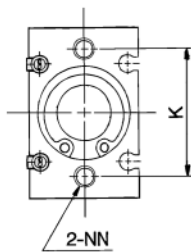
# Series CUK

## Dimensions/Non-rotating Rod: Single Acting Spring Return

ø6, ø10

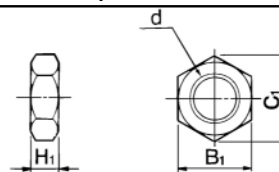


ø16 to ø32



### Rod end nut/Options

Material: Carbon steel



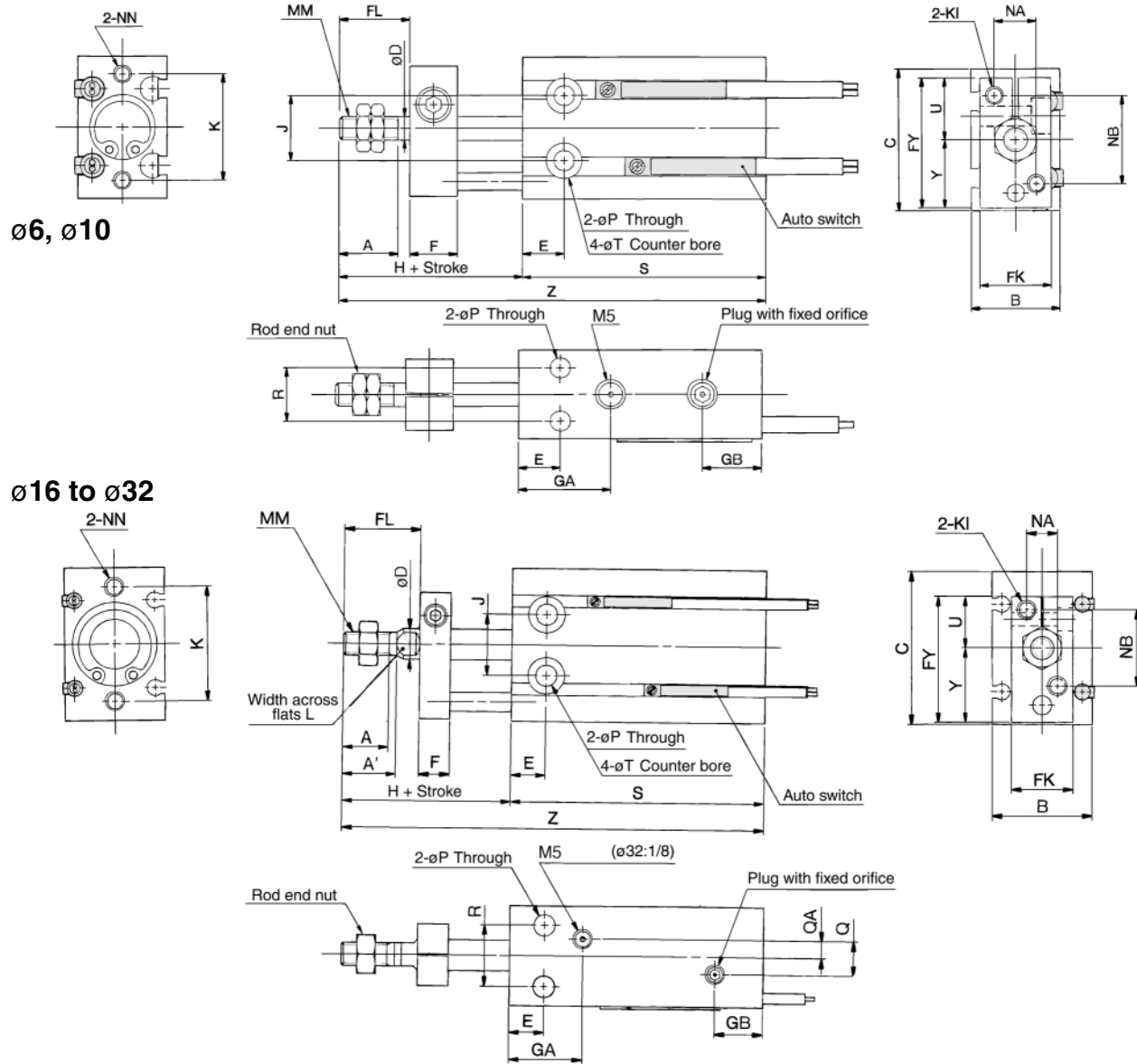
Part No.	Tube bore size (mm)	d	H1	B1	C1
NTP-006	6	M3	1.8	5.5	6.4
NTP-010	10	M4	2.4	7	8.1
NTJ-015A	16	M5	4	8	9.2
NT-015A	20	M6	5	10	11.5
NT-02	25	M8	5	13	15.0
NT-03	32	M10 X 1.25	6	17	19.6

Bore (mm)	A	A'	B	C	D	E	F	FL	FK	FY	GA	GB	H	J	K	KI	L	MM	NA	NB	NN
6	7	-	13	22	3	7	8	9	11	20.5	15	10	18	10	17	M3	-	M3	6	14	M3 Depth5
10	10	-	15	24	4	7	8	12	12	22	16.5	10	21	11	18	M3	-	M4	7	15	M3 Depth5
16	11	12.5	20	32	6	7	8	17	13	28	16.5	11.5	26	14	25	M4	5	M5	6	18	M4 Depth6
20	12	14	26	40	8	9	8	20	16	33	19	12.5	29	16	30	M4	6	M6	8	20	M5 Depth8
25	15.5	18	32	50	10	10	10	22	20	43.5	21.5	13	33	20	38	M5	8	M8	10	28	M5 Depth8
32	19.5	22	40	62	12	11	12	29	24	51.5	23	12.5	42	24	48	M5	10	M10 X 1.25	12	32	M6 Depth9

Bore (mm)	P	Q	QA	R	T	U	Y	Without auto switch						With auto switch					
								S			Z			S			Z		
								5st	10st	15st	5st	10st	15st	5st	10st	15st	5st	10st	15st
6	3.2	-	-	7	6 Depth4.8	10	10.5	38	43	48	56	61	66	38	43	48	56	61	66
10	3.2	-	-	9	6 Depth5	10.5	11.5	41	46	56	62	67	77	41	46	56	62	67	77
16	4.5	4	2	12	7.6 Depth6.5	12.5	15.5	35	40	50	61	66	76	45	50	60	71	76	86
20	5.5	9	4.5	16	9.3 Depth8	13.5	19.5	41	46	56	70	75	85	51	56	66	80	85	95
25	5.5	9	4.5	20	9.3 Depth9	19	24.5	45	50	60	78	83	93	55	60	70	88	93	103
32	6.6	13.5	4.5	24	11 Depth11.5	21	30.5	47	52	62	89	94	104	57	62	72	99	104	114

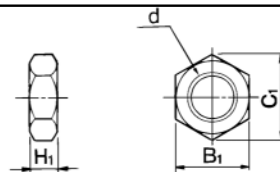
# Free Mount Cylinder/Non-rotating Rod: Single Acting Spring Return/Extend **Series CUK**

## Dimensions/Non-rotating Rod: Single Acting Spring Extend



### Rod end nut/Options

Material: Carbon steel



Part No.	Tube bore size (mm)	d	H1	B1	C1
<b>NTP-006</b>	<b>6</b>	M3	1.8	5.5	6.4
<b>NTP-010</b>	<b>10</b>	M4	2.4	7	8.1
<b>NTJ-015A</b>	<b>16</b>	M5	4	8	9.2
<b>NT-015A</b>	<b>20</b>	M6	5	10	11.5
<b>NT-02</b>	<b>25</b>	M8	5	13	15.0
<b>NT-03</b>	<b>32</b>	M10 X 1.25	6	17	19.6

Bore (mm)	A	A'	B	C	D	E	F	FL	FK	FY	GA	GB	H	J	K	KI	L	MM	NA	NB	NN
<b>6</b>	7	-	13	22	3	7	8	9	11	20.5	15	10	18	10	17	M3	-	M3	6	14	M3 Depth5
<b>10</b>	10	-	15	24	4	7	8	12	12	22	16.5	10	21	11	18	M3	-	M4	7	15	M3 Depth5
<b>16</b>	11	12.5	20	32	6	7	8	17	13	28	16.5	11.5	26	14	25	M4	5	M5	6	18	M4 Depth6
<b>20</b>	12	14	26	40	8	9	8	20	16	33	19	12.5	29	16	30	M4	6	M6	8	20	M5 Depth8
<b>25</b>	15.5	18	32	50	10	10	10	22	20	43.5	21.5	13	33	20	38	M5	8	M8	10	28	M5 Depth8
<b>32</b>	19.5	22	40	62	12	11	12	29	24	51.5	23	12.5	42	24	48	M5	10	M10 X 1.25	12	32	M6 Depth9

Bore (mm)	P	Q	QA	R	T	U	Y	Without auto switch						With auto switch					
								S			Z			S			Z		
								5st	10st	15st	5st	10st	15st	5st	10st	15st	5st	10st	15st
<b>6</b>	3.2	-	-	7	6 Depth4.8	10	10.5	38	43	48	61	71	81	38	43	48	61	71	81
<b>10</b>	3.2	-	-	9	6 Depth5	10.5	11.5	41	46	56	67	77	92	41	46	56	67	77	92
<b>16</b>	4.5	4	2	12	7.6 Depth6.5	12.5	15.5	45	50	60	76	86	101	45	50	60	76	86	101
<b>20</b>	5.5	9	4.5	16	9.3 Depth8	13.5	19.5	41	46	56	75	85	100	51	56	66	85	95	110
<b>25</b>	5.5	9	4.5	20	9.3 Depth9	19	24.5	45	50	60	83	93	108	55	60	70	93	103	118
<b>32</b>	6.6	13.5	4.5	24	11 Depth11.5	21	30.5	47	52	62	94	104	119	57	62	72	104	114	129



# Free Mount Cylinder/Long Stroke: Double Acting Single Rod

# Series CU

ø6, ø10, ø16, ø20, ø25, ø32

## How to Order

**Standard**    CU 6 60 D

**With auto switch**    CDU 6 60 D — A90

**Thread Port (ø32)**

—	Rc(PT)
E	G(PF)

**Built-in magnet**

**Bore size**

6	6mm
10	10mm
16	16mm
20	20mm
25	25mm
32	32mm

**Stroke (mm)**

ø6, ø10, ø16	40, 50, 60
ø20, ø25, ø32	60, 70, 80, 90, 100

**Action**

D	Double acting
---	---------------

**Number of auto switch**

—	2
S	1

**Auto switch**

—	Without auto switch
---	---------------------

These auto switches have been changed  
Contact SMC or view [www.smcworld.com](http://www.smcworld.com)

F9N→M9N	F9NV→M9NV
F9P→M9P	F9PV→M9PV
F9B→M9B	F9BV→M9BV

Refer to the table below for auto switch model no.

**Applicable Auto switches** / Refer to p.5.3-2 for further specifications on auto switches.

Style	Special function	Electrical entry	Indicator	Wiring (Output)	Load voltage		Model		Lead wire* (m)			Applicable load	
					DC	AC	Perp.	In-line	0.5 (-)	3 (L)	5 (Z)		
Feed switch	—	Grommet	No	2 wire	24V	5V	≤100V	A90V	A90	●	●	—	IC
						12V	100V	A93V	A93	●	●	—	
Solid state switch	—	Grommet	Yes	3 wire (Equiv. NPN)	24V	12V	—	F9NV	F9N	●	●	—	Relay, PLC
				3 wire (NPN)									
				3 wire (PNP)									
				2 wire									
				3 wire (NPN)									
				3 wire (PNP)									
				2 wire									
Diagnostic (2 colour)	F9NWV	F9NW	●	●	○								
Water resistant (2 colour)	F9PWV	F9PW	●	●	○								
	F9BWV	F9BW	●	●	○								
	—	F9BA	—	●	○								

\*Lead wire length 0.5m..... — (Example) A93 5m..... Z (Example) F9NWX  
3m..... L (Example) A93L

\*Solid state switch marked with a "○" are manufactured upon receipt of order.

## ⚠ Precautions

Be sure to read before handling. Refer to p.0-39 to 0-46 for Safety Instructions and common precautions.

## Auto Switch Mounting Position

Refer to p.2.1-21 for mounting position of CDU long stroke series. Specifications are same as standard double acting single rod style.

## Tightening Torque

Refer to p.2.1-11 for mounting of long stroke style.

## Theoretical Force

Refer to p.2.1-12. Specifications are same as CU series double acting single rod style.

# Free Mount Cylinder/Long Stroke: Double Acting Single Rod *Series CU*



## Specifications

Bore size (mm)	ø6	ø10	ø16	ø20	ø25	ø32
Fluid	Air					
Proof pressure	1.05MPa					
Max. operating pressure	0.7MPa					
Min. operating pressure	0.12MPa	0.06MPa		0.05MPa		
Ambient and fluid temperature	Without auto switch: -10°C to 70°C With auto switch : -10°C to 60°C (No freezing)					
Lubrication	Not required (non-lube)					
Operating piston speed	50 to 500mm/s					
Cushion	Rubber bumper					
Rod end thread	Male thread					
Thread tolerance	JIS class 2					
Stroke tolerance	+1.0 0 mm					

## Standard Stroke

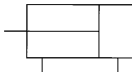
Bore size (mm)	Standard stroke(mm)
ø6, ø10, ø16	40, 50, 60
ø20, ø25, ø32	60, 70, 80, 90, 100

## Weight/( ): D-A90

Model	Stroke (mm)							Unit: g
	40	50	60	70	80	90	100	
<b>C(D)U6-□D</b>	43 (53)	49 (59)	50 (65)	-	-	-	-	<b>CUJ</b>
<b>C(D)U10-□D</b>	64 (74)	72 (82)	80 (90)	-	-	-	-	<b>CU</b>
<b>C(D)U16-□D</b>	92 (122)	104 (134)	116 (146)	-	-	-	-	<b>CQS</b>
<b>C(D)U20-□D</b>	-	-	216 (253)	238 (275)	260 (297)	282 (319)	304 (341)	<b>CQ2</b>
<b>C(D)U25-□D</b>	-	-	363 (422)	397 (456)	431 (490)	465 (524)	499 (558)	<b>RQ</b>
<b>C(D)U32-□D</b>	-	-	526 (604)	574 (652)	622 (700)	670 (748)	718 (796)	<b>MU</b>

\*Refer to p.5.3-75 for auto switch weight.

JIS symbol  
Double acting/Single rod

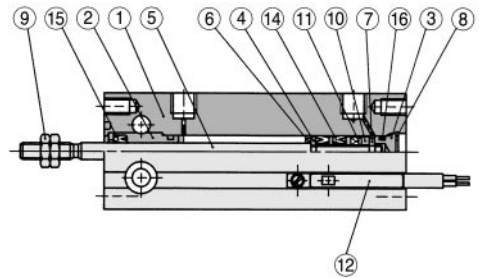
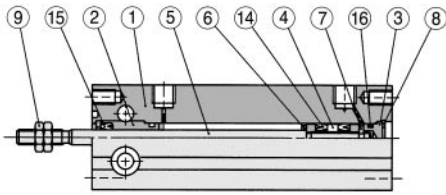


# Series CU

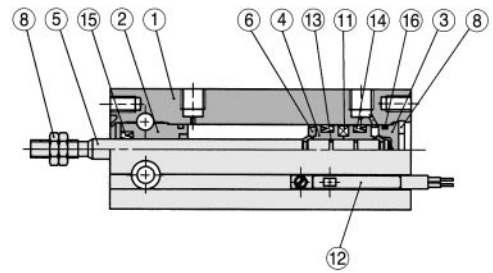
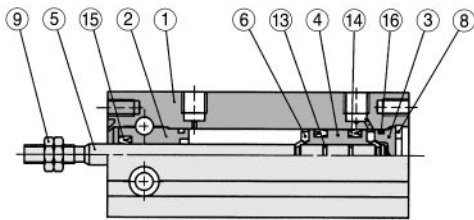
## Construction

ø6

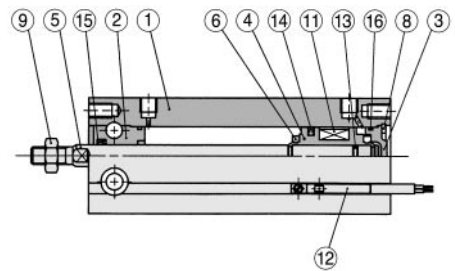
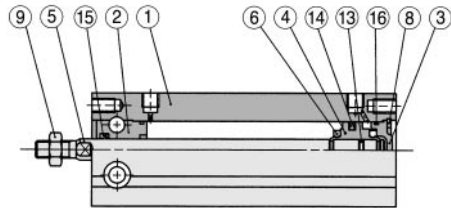
With auto switch



ø10



ø16 to ø32




### Component Parts

No.	Description	Material	Note
①	Cylinder tube	Aluminum alloy	Hard anodized
②	Rod cover	Aluminum bearing alloy	Hard anodized
③	Head cover	Brass	ø6 to ø10, nickel plated
		Aluminum alloy	ø16 to ø32, White chromated
④	Piston	Brass	ø6 to ø10
		Aluminum alloy	ø16 to ø32, Chromated
⑤	Piston rod	Stainless steel	
⑥	Bumper A	Urethane	
⑦	Bumper B	Urethane	

No.	Description	Material	Note
⑧	Snap ring	Carbon tool steel	Phosphate coating
⑨	Rod end nut	Carbon steel	Nickel plated
⑩	Magnet holder	Brass	ø6
⑪	Magnet	Magnet material	
⑫	Auto switch	—	
⑬	Piston gasket	NBR	
⑭	Piston seal		
⑮	Rod seal		
⑯	Gasket		

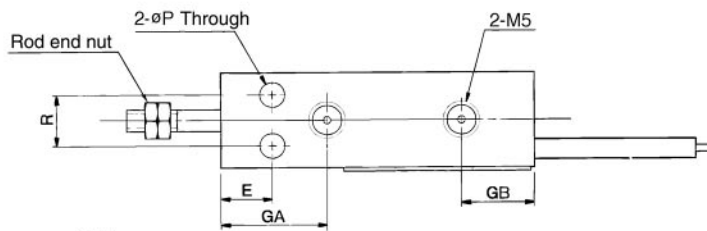
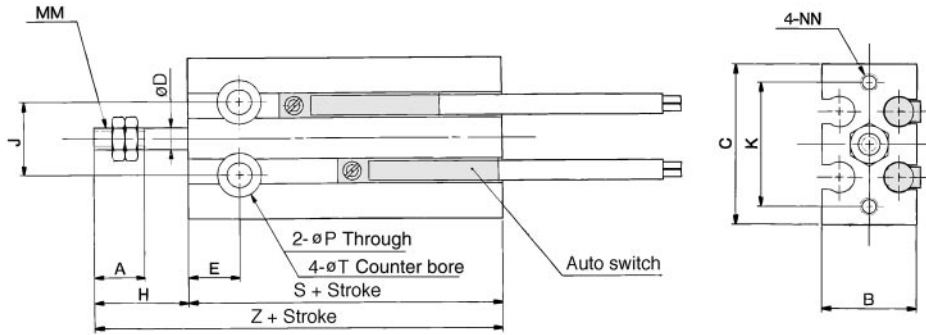
### Replacement Parts: Seal Kits

Bore size (mm)	Kit No.	Contents
ø10	CU10D-PS	Kits include items ⑭, ⑮ and ⑯ from the table above
ø16	CU16D-PS	
ø20	CU20D-PS	
ø25	CU25D-PS	
ø32	CU32D-PS	

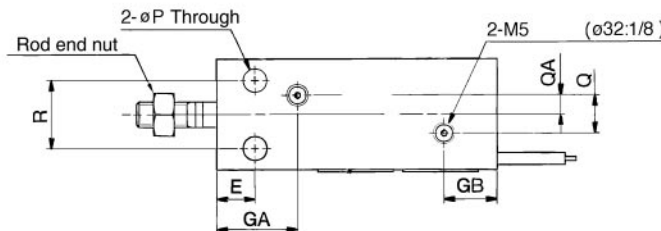
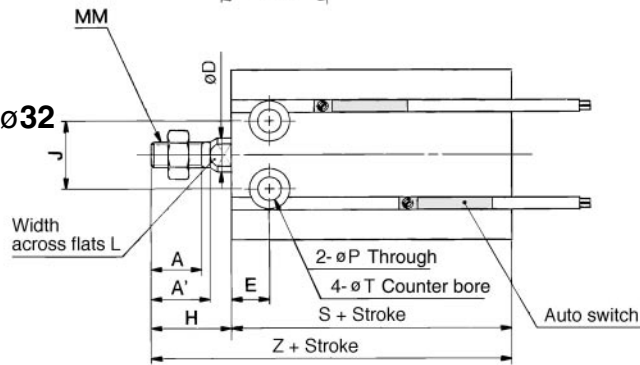
 Seal kits consist of items ⑭, ⑮ and ⑯ contained in one kit, and can be ordered using the order number for each respective tube bore size.

## Dimensions/Double Acting Single Rod

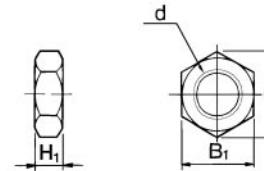
ø6, ø10



ø16 to ø32



Rod end nut/Options



Material: Carbon steel

Part No.	Tube bore size (mm)	d	H <sub>1</sub>	B <sub>1</sub>	C <sub>1</sub>
NTP-006	6	M3	1.8	5.5	6.4
NTP-010	10	M4	2.4	7	8.1
NTJ-015A	16	M5	4	8	9.2
NT-015A	20	M6	5	10	11.5
NT-02	25	M8	5	13	15.0
NT-03	32	M10 X 1.25	6	17	19.6

(mm)

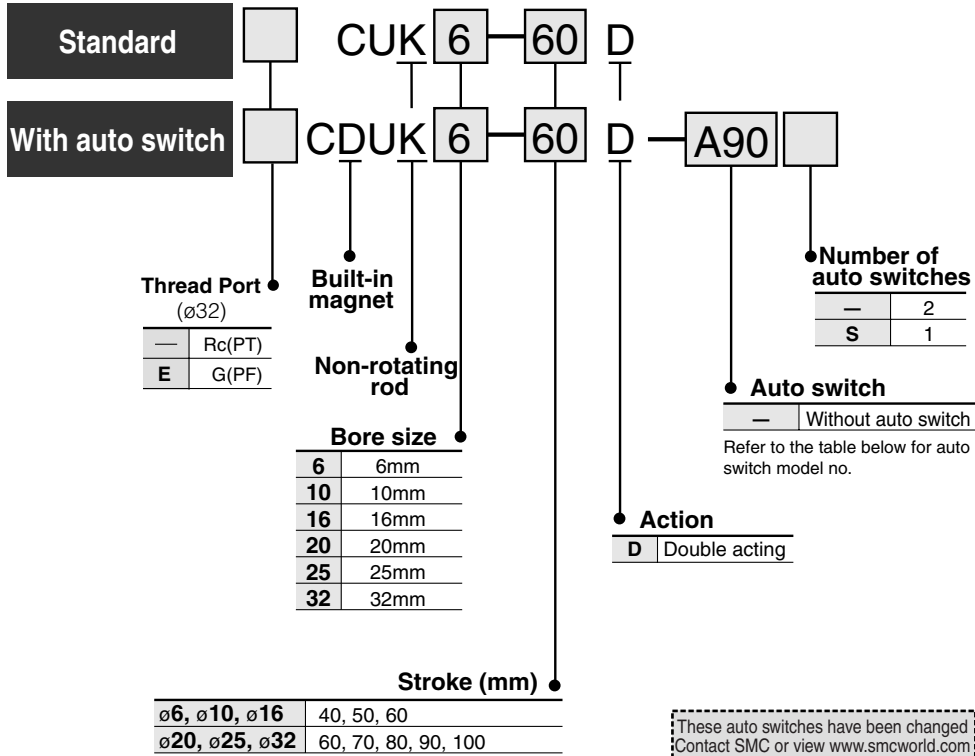
Bore (mm)	A	A'	B	C	D	E	GA	GB	H	J	K	L	MM	NN	P	Q	QA
6	7	-	13	22	3	7	15	10	13	10	17	-	M3	M3 Depth 5	3.2	-	-
10	10	-	15	24	4	7	16.5	10	16	11	18	-	M4	M3 Depth 5	3.2	-	-
16	11	12.5	20	32	6	7	16.5	11.5	16	14	25	5	M5	M4 Depth 6	4.5	4	2
20	12	14	26	40	8	9	19	12.5	19	16	30	6	M6	M5 Depth 8	5.5	9	4.5
25	15.5	18	32	50	10	10	21.5	13	23	20	38	8	M8	M5 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 Depth 9	6.6	13.5	4.5

Bore (mm)	R	T	W/o auto switch		W/ 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

# Free Mount Cylinder/Long Stroke Non-rotating Rod: Double Acting Single Rod Series **CUK**

ø6, ø10, ø16, ø20, ø25, ø32

## How to Order



These auto switches have been changed  
Contact SMC or view [www.smcworld.com](http://www.smcworld.com)

F9N⇒M9N F9NV⇒M9NV  
F9P⇒M9P F9PV⇒M9PV  
F9B⇒M9B F9BV⇒M9BV

### Applicable Auto Switches/Refer to p.5.3-2 for further information on auto switches.

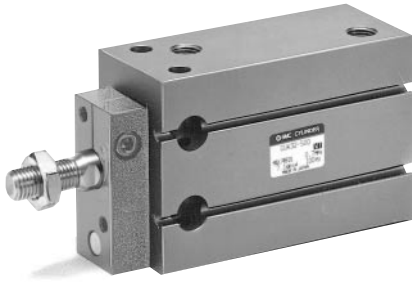
Style	Special function	Electrical entry	Indicator	Wiring (Output)	Load voltage		Model		Lead wire* (m)			Applicable load	
					DC	AC	Perp.	In-line	0.5 (-)	3 (L)	5 (Z)		
Reed switch	—	Grommet	No	2 wire	24V	5V	≤ 100V	A90V	A90	●	●	—	IC Relay, PLC
			Yes			12V		100V	A93V	A93	●	●	
			Yes	3 wire (Equiv. NPN)	—	5V	—	A96V	A96	●	●	—	
Solid state switch	—	Grommet	Yes	3 wire (NPN)	24V	12V	—	F9NV	F9N	●	●	—	— Relay, PLC
				3 wire (PNP)				F9PV	F9P	●	●	—	
				2 wire				F9BV	F9B	●	●	—	
				3 wire (NPN)				F9NWV	F9NW	●	●	○	
				3 wire (PNP)				F9PWV	F9PW	●	●	○	
				2 wire				F9BWV	F9BW	●	●	○	
				—				F9BA	—	●	○	—	

\*Lead wire length 0.5m..... — (Example) A93 5m..... Z (Example) F9NWZ  
3m..... L (Example) A93L

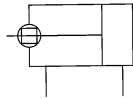
\*Solid state switches marked with a "○" are manufactured upon receipt of order.

D-9□ auto switch is attachable. Refer to p.5.3-21 and 5.3-22 for detailed specifications of D-90, D-90A, D-93A, D-97.

# Free Mount Cylinder/Long Stroke Non-rotating Rod: Double Acting Single Rod *Series CUK*



JIS symbol  
Double acting/Single rod



## Specifications

Bore size (mm)	ø6	ø10	ø16	ø20	ø25	ø32
Fluid	Air					
Proof pressure	1.05MPa					
Max. operating pressure	0.7MPa					
Min. operating pressure	0.15MPa	0.10MPa	0.08MPa			
Ambient and fluid temperature	Without auto switch: -10°C to -70°C With auto switch : -10°C to -60°C (No freezing)					
Lubrication	Not required (Non-lube)					
Operating piston speed	50 to 500mm/s					
Cushion	Rubber bumper					
Rod end thread	Male thread					
Thread tolerance	JIS class 2					
Stroke tolerance	+10 0 mm					
Non-rotating accuracy (1)	±0.8°			±0.5°		

Note 1) No load: at rod retracted

## Standard Stroke

Bore size (mm)	Standard stroke (mm)
ø6, ø10, ø16	40, 50, 60
ø20, ø25, ø32	60, 70, 80, 90, 100

## Weight/( ): With D-A90

Model	Stroke (mm)						
	40	50	60	70	80	90	100
C(D)UK6-□D	49 (59)	55 (65)	61 (71)	-	-	-	-
C(D)UK10-□D	71 (81)	79 (89)	87 (97)	-	-	-	-
C(D)UK16-□D	102 (132)	114 (144)	126 (156)	-	-	-	-
C(D)UK20-□D	-	-	243 (284)	267 (308)	291 (332)	315 (356)	339 (380)
C(D)UK25-□D	-	-	405 (460)	440 (495)	475 (530)	510 (565)	545 (600)
C(D)UK32-□D	-	-	617 (695)	669 (747)	721 (799)	773 (851)	825 (903)

Refer to p.5.3-75 for auto switch weight.

CUJ  
CU  
CQS  
CQ2  
RQ  
MU

## ⚠ Precautions

Be sure to read before handling.  
Refer to p.0-39 to 0-46 for Safety  
Instructions and common precautions.

## Allowable Rotating Torque

Make sure that rotational torque is not applied to the piston rod of long stroke style cylinder. If rotational torque must be applied due to unavoidable circumstances, refer to p.2.1-32.

## Tightening Torque

Refer to p.2.1-11 for mounting of CUK series.

## Theoretical Force

Refer to p.2.1-12. Specifications are same as CU double acting single rod style.

## Auto Switch Mounting Position

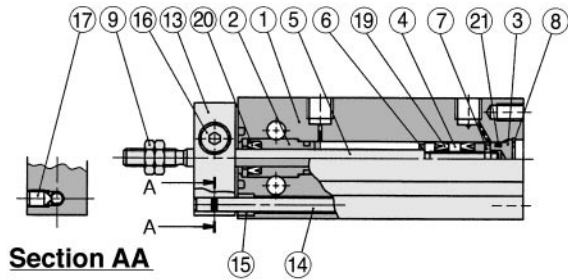
Refer to p.2.1-16 for auto switch mounting position of CDUK long stroke. Specifications are same as standard single acting double rod style.



# Series CUK

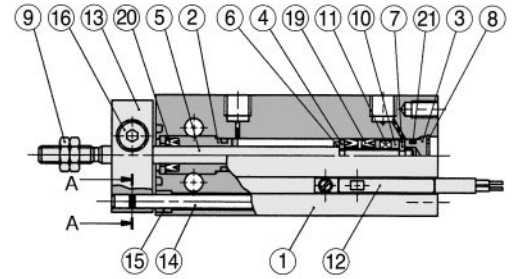
## Construction

ø6

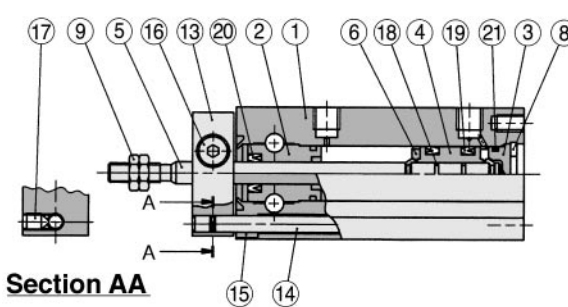


Section AA

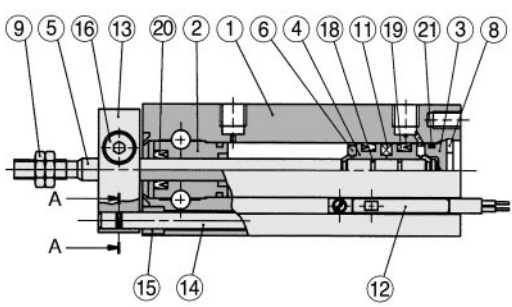
With auto switch



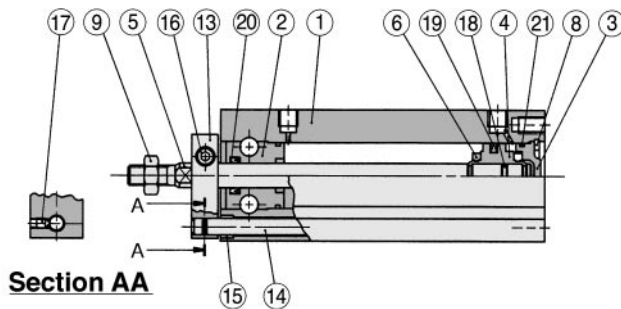
ø10



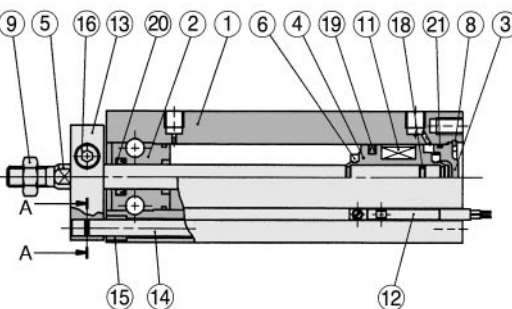
Section AA



ø16 to ø32



Section AA



### Component Parts

No.	Description	Material	Note
①	Cylinder tube	Aluminum alloy	Hard anodized
②	Rod cover	Aluminum bearing alloy	Hard anodized
③	Head cover	Brass	ø6 to ø10, nickel plated
		Aluminum alloy	ø16 to ø32, White chromated
④	Piston	Brass	ø6 to ø10
		Aluminum alloy	ø16 to ø32, Chromated
⑤	Piston rod	Stainless steel	
⑥	Bumper A	Urethane	
⑦	Bumper B	Urethane	
⑧	Snap ring	Carbon tool steel	Phosphate coating
⑨	Rod end nut	Carbon steel	Nickel plated
⑩	Magnet holder	Brass	ø6

No.	Description	Material	Note
⑪	Magnet	Magnet material	
⑫	Auto switch	—	
⑬	Non-rotating plate	Aluminum alloy	Nickel plated
⑭	Guide rod	Stainless steel	
⑮	Bushing	Black anodized	
⑯	Hex. socket head cap screw	Carbon steel	Black zinc chromated
⑰	Hex. socket head snap ring	Carbon steel	Black zinc chromated
⑱	Piston gasket	NBR	
⑲	Piston seal		
⑲	Rod seal		
⑳	Gasket		

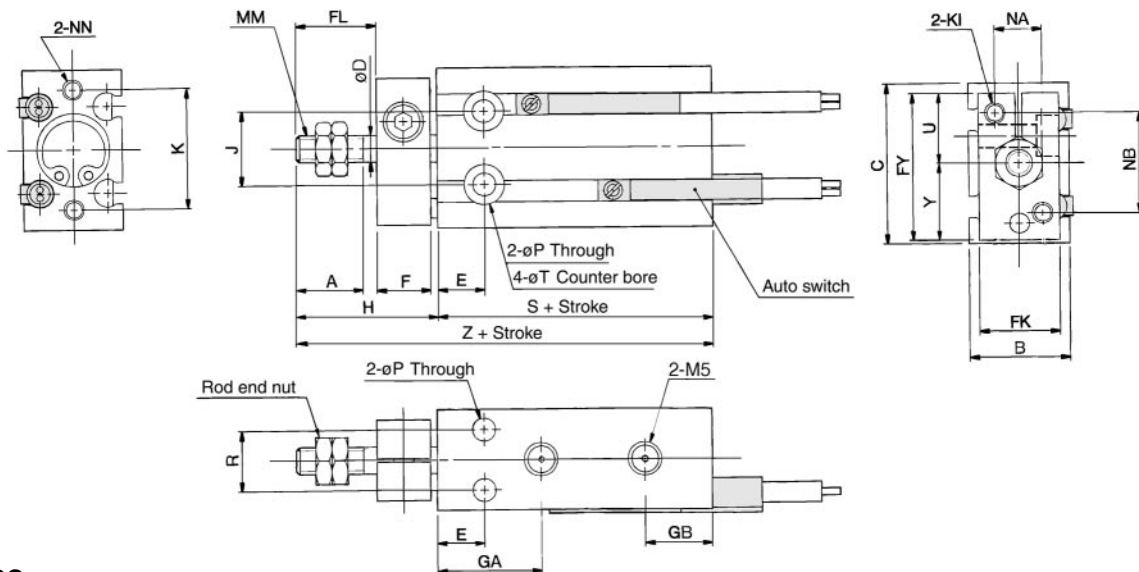
### Replacement Parts: Seal Kits

Bore size (mm)	Kit No.	Contents
ø10	CU10D-PS	Kits include items ⑱, ⑳ and ㉑ from the table above.
ø16	CU16D-PS	
ø20	CU20D-PS	
ø25	CU25D-PS	
ø32	CU32D-PS	

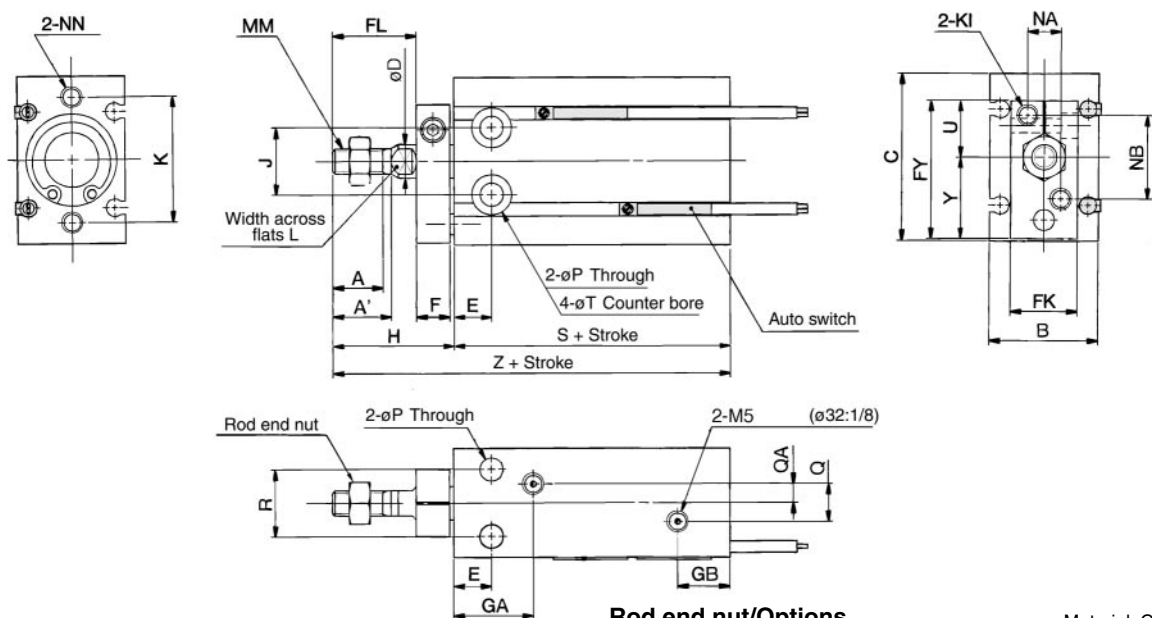
Seal kits consist of items ⑱, ⑳ and ㉑ contained in one kit, and can be ordered using the order number for each respective tube bore size.

**Dimensions/Non-rotating Rod: Double Acting Single Rod**

ø6, ø10



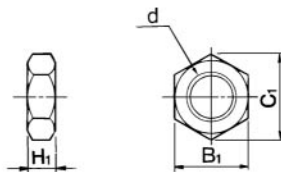
ø16 to ø32



**Rod end nut/Options**

Material: Carbon steel

Part No.	Tube bore size (mm)	d	H1	B1	C1
NTP-006	6	M3	1.8	5.5	6.4
NTP-010	10	M4	2.4	7	8.1
NTJ-015A	16	M5	4	8	9.2
NT-015A	20	M6	5	10	11.5
NT-02	25	M8	5	13	15.0
NT-03	32	M10 X 1.25	6	17	19.6



Bore (mm)	(mm)																	
	A	A'	B	C	D	E	F	FL	FK	FY	GA	GB	H	J	K	KI	L	MM
6	7	-	13	22	3	7	8	9	11	20.5	15	10	18	10	17	M3	-	M3
10	10	-	15	24	4	7	8	12	12	22	16.5	10	21	11	18	M3	-	M4
16	11	12.5	20	32	6	7	8	17	13	28	16.5	11.5	26	14	25	M4	5	M5
20	12	14	26	40	8	9	8	20	16	33	19	12.5	29	16	30	M4	6	M6
25	15.5	18	32	50	10	10	10	22	20	43.5	21.5	13	33	20	38	M5	8	M8
32	19.5	22	40	62	12	11	12	29	24	51.5	23	12.5	42	24	48	M5	10	M10 X 1.25

Bore (mm)	NA	NB	NN	P	Q	QA	R	T	U	Y	W/o auto switch		W/ auto switch	
											S	Z	S	Z
6	6	14	M3 Depth5	3.2	-	-	7	6 Depth4.8	10	10.5	33	51	33	51
10	7	15	M3 Depth5	3.2	-	-	9	6 Depth5	10.5	11.5	36	57	36	57
16	6	18	M4 Depth6	4.5	4	2	12	7.6 Depth6.5	12.5	15.5	30	56	40	66
20	8	20	M5 Depth8	5.5	9	4.5	16	9.3 Depth8	13.5	19.5	36	65	46	75
25	10	28	M5 Depth8	5.5	9	4.5	20	9.3 Depth9	19	24.5	40	73	50	83
32	12	32	M6 Depth9	6.6	13.5	4.5	24	11 Depth11.5	21	30.5	42	84	52	94

- CUJ
- CU
- CQS
- CQ2
- RQ
- MU



