

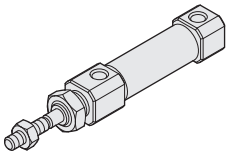
Actuator Unit – SBA, SBAI series

Pen cylinder, Single acting cylinder

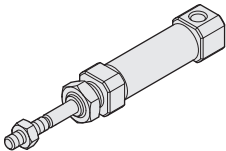
CHELIC



SBA, SBAI series
Provide CAD external dimension.



SBA series ----- Pen cylinder ----- $\varnothing 6 \sim \varnothing 16$ ----- P.6-5.2



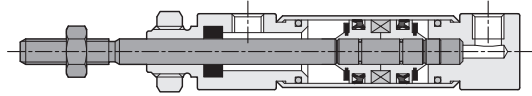
SBAI series ----- Pen cylinder (Single acting normal in) ----- $\varnothing 6 \sim \varnothing 16$ ----- P.6-5.9

SBA series Pen Cylinder

Product features

CHELIC

Internal structure



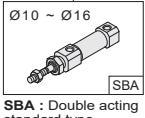
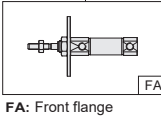
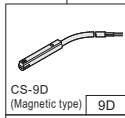
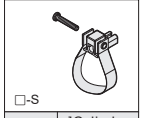
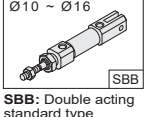
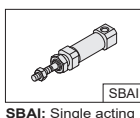
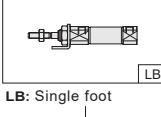
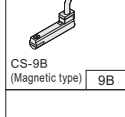
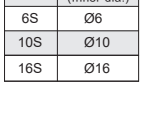
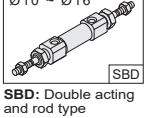
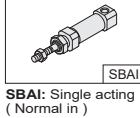
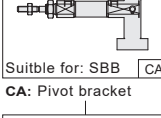
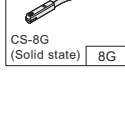
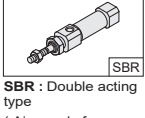
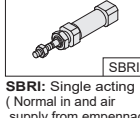
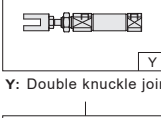
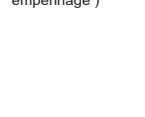
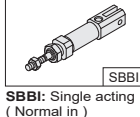


Specification

Item	Bore size(mm)	Ø6	Ø10	Ø16
Action		Double acting /Single acting		
Fluid		Air		
Mounting type		FA, LB, CA, Y, I		
Min. operating pressure	MPa	0.12	0.06	
Max. operating pressure	Kgf/cm ² (kPa)	7 (700)		
Ambient and fluid temperature	°C	-10 ~ 60		
Piston speed	mm/s	50 ~ 700		
Lubrication		Lubrication free type		
Port size		M5 x 0.8		
Sensing device		With magnet		

Standard stroke

Bore size (mm)	Stroke for double acting	Stroke for single acting
Ø6	15, 30, 45, 60	15, 30, 45, 60
Ø10	15, 30, 45, 60, 75 100, 125, 150	15, 30, 45, 60
Ø16	15, 30, 45, 60, 75, 100, 125, 150, 175, 200	15, 30, 45, 60

Code of order

Model	Bore size	Stroke	Mounting type	Sensor switch	Mounting bracket	Sensor/ Bracket qty								
<p>SBA</p> <p>Ø10 ~ Ø16</p>  <p>SBA : Double acting standard type</p>	<p>06 - Ø6 mm</p> <p>10 - Ø10 mm</p> <p>16 - Ø16 mm</p>	<p>Ø6 - 15 ~ 60 mm</p> <p>Ø10 - 15 ~ 150 mm</p> <p>Ø16 - 15 ~ 200 mm</p> <p>※ Refer to stroke list</p>	<p>FA</p>  <p>FA: Front flange</p>	<p>9D</p>  <p>CS-9D (Magnetic type) 9D</p>	<p>6S</p>  <p>□-S</p> <table border="1"> <thead> <tr> <th>Mark</th> <th>∅Cylinder (Inner dia.)</th> </tr> </thead> <tbody> <tr> <td>6S</td> <td>Ø6</td> </tr> <tr> <td>10S</td> <td>Ø10</td> </tr> <tr> <td>16S</td> <td>Ø16</td> </tr> </tbody> </table>	Mark	∅Cylinder (Inner dia.)	6S	Ø6	10S	Ø10	16S	Ø16	<p>2</p> <p>1 : 1 PC</p> <p>2 : 2 PC</p>
Mark	∅Cylinder (Inner dia.)													
6S	Ø6													
10S	Ø10													
16S	Ø16													
<p>SBB</p> <p>Ø10 ~ Ø16</p>  <p>SBB : Double acting standard type</p>	<p>SBAI</p>  <p>SBAI: Single acting (Normal in)</p>	<p>LB</p>  <p>LB: Single foot</p>	<p>9B</p>  <p>CS-9B (Magnetic type) 9B</p>	<p>CA</p>  <p>CA: Pivot bracket</p>										
<p>SBD</p> <p>Ø10 ~ Ø16</p>  <p>SBD : Double acting and rod type</p>	<p>SBR</p>  <p>SBR : Double acting type (Air supply from empennage)</p>	<p>Y</p>  <p>Y: Double knuckle joint</p>	<p>8G</p>  <p>CS-8G (Solid state) 8G</p>											
<p>SBR</p> <p>Ø6 ~ Ø16</p>  <p>SBR : Double acting type (Air supply from empennage)</p>	<p>SBRi</p>  <p>SBRi: Single acting (Normal in and air supply from empennage)</p>	<p>I</p>  <p>I: Single knuckle joint</p>												
<p>SBRi</p> <p>Ø6 ~ Ø16</p>  <p>SBRi : Single acting (Normal in)</p>	<p>SBRo</p>  <p>SBRo: Single acting (Normal out and air supply from empennage)</p>													
<p>SBBI</p> <p>Ø6 ~ Ø16</p>  <p>SBBI : Single acting (Normal in)</p>	<p>SBBo</p>  <p>SBBo: Single acting (Normal out)</p>													

SBA

SDA

SDX

DBS2

DBF2

DBT

FDA

SBA series Pen Cylinder

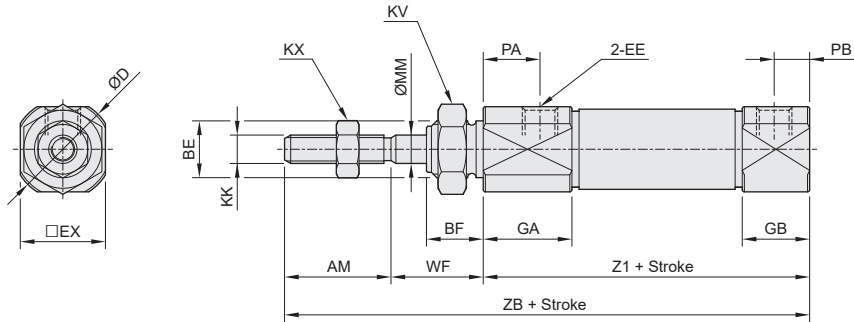
Dimension

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Double acting (Standard) - SBA



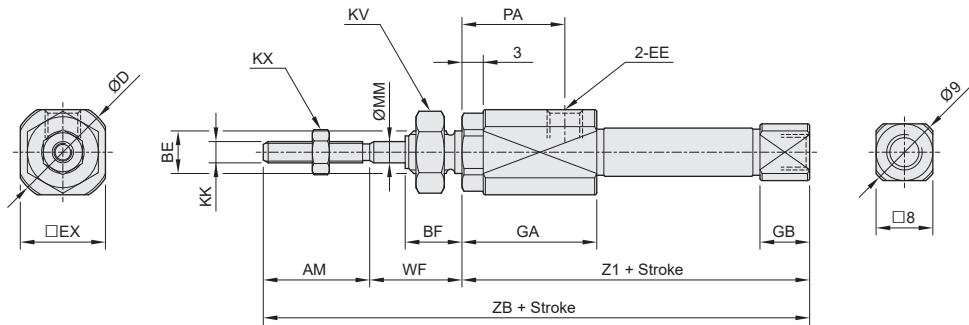
- SBA Ø10, Ø16



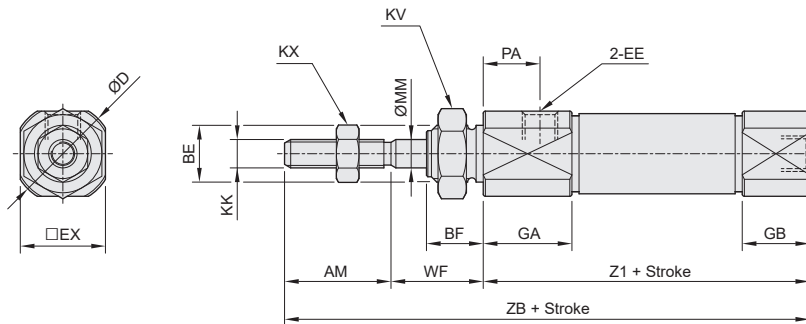
Double acting (Air supply from empennage) - SBR



- SBR Ø6



- SBR Ø10, Ø16



Dimension

Bore size (mm)	AM	BE	BF	D	EE	EX	GA	GB	KK	KV	KX	MM	PA	PB	WF	Z1	ZB
Ø6	15	M6x1.0P	8	14	M5x0.8P	12	19	7	M3x0.5P	8	5.5	3	14.5	—	13	49	77
Ø10	15	M8x1.0P	8	14	M5x0.8P	12	12.5	9.5	M4x0.7P	13	7	4	8	5	13	46	74
Ø16	15	M10x1.0P	8	20	M5x0.8P	18	12.5	9.5	M5x0.8P	15	8	5	8	5	13	47	75

SBA series Pen Cylinder

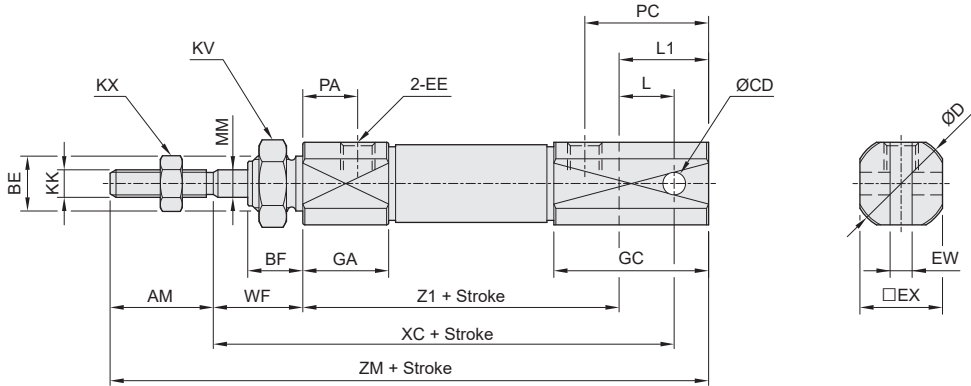
Dimension

CHELIC

Double acting (Standard) - SBB



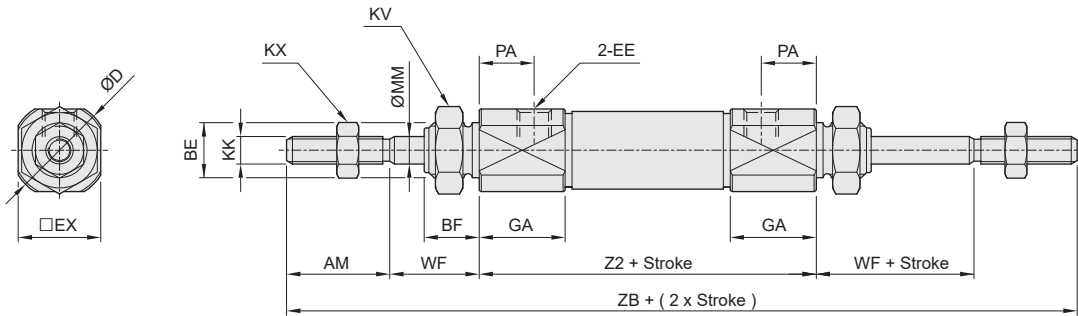
● SBB Ø10, Ø16



Double acting and Rod type - SBD



● SBD Ø10, Ø16



SBA

SDA

SDX

DBS2

DBF2

DBT

FDA

Dimension

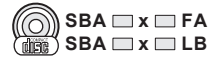
Bore size (mm)	AM	BE	BF	CD	D	EE	EX	EW	GA	GC	KK	KV	KX	L	L1	MM	PA	PC	WF	XC	Z1	Z2	ZB	ZM
Ø10	15	M8x1.0P	8	3.3	14	M5x0.8P	12	3.2	12.5	22.5	M4x0.7P	13	7	8	13	4	8	18	13	67	46	49	105	87
Ø16	15	M10x1.0P	8	5	20	M5x0.8P	18	6.5	12.5	27.5	M5x0.8P	15	8	10	18	5	8	23	13	70	47	50	106	93

SBA series Pen Cylinder

Bracket dimensions-Air supply from empennage, Double acting

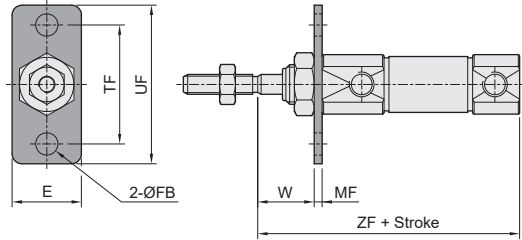
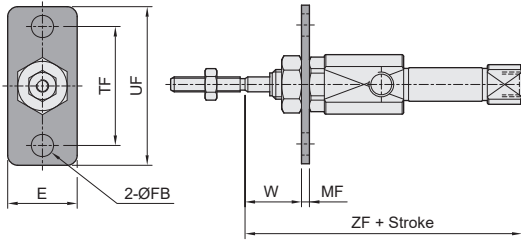
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Front flange — FA



● SBR Ø6

● SBA, SBR Ø10, Ø16

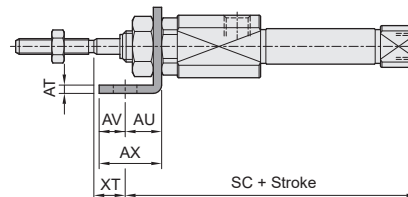
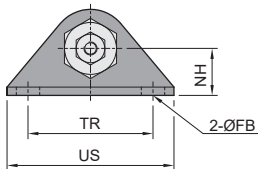


Dimension

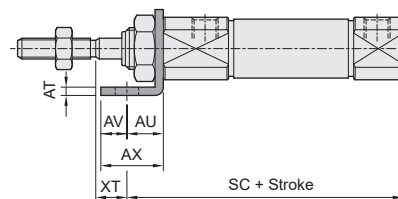
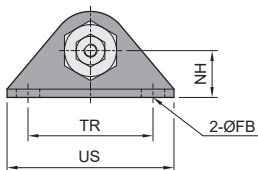
Bore size (mm)	E	FB	MF	TF	UF	W	ZF
Ø6	14	4.5	1.6	24	32	11.4	62
Ø10	14	4.5	1.6	24	32	11.4	59
Ø16	20	5.5	2.3	33	42	10.7	60

Single foot — LB

● SBR Ø6



● SBA, SBR Ø10, Ø16



Dimension

Bore size (mm)	AT	AU	AV	AX	FB	NH	SC	TR	US	XT
Ø6	1.6	7	5	12	4.5	9	56	24	32	6
Ø10	1.6	7	5	12	4.5	9	53	24	32	6
Ø16	2.3	9	6	15	5.5	14	56	33	42	4

SBA series Pen Cylinder

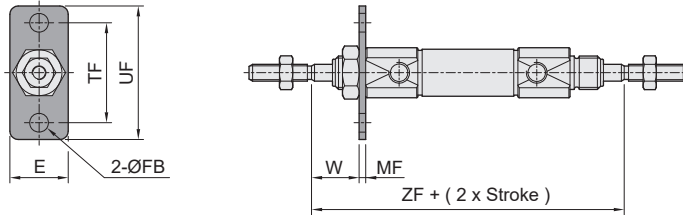
Bracket dimensions-Double acting, Rod type

CHELIC

Front flange — FA



● SBD Ø10, Ø16

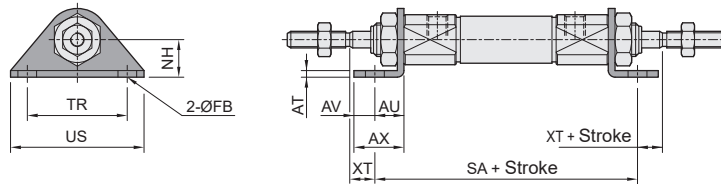


Dimension

Bore size (mm)	E	FB	MF	TF	UF	W	ZF
Ø10	14	4.5	1.6	24	32	11.4	75
Ø16	20	5.5	2.3	33	42	10.7	76

Double foot for both front and rear — LB

● SBD Ø10, Ø16



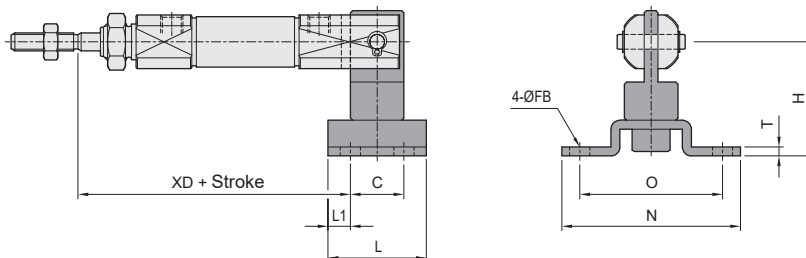
Dimension

Bore size (mm)	AT	AU	AV	AX	FB	NH	SA	TR	US	XT
Ø10	1.6	7	5	12	4.5	9	63	24	32	6
Ø16	2.3	9	6	15	5.5	14	68	33	42	4

Pivot bracket — CA



● SBB Ø10, Ø16



Dimension

Bore size (mm)	C	FB	H	L	L1	N	O	T	XD
Ø10	12	4.5	29	22	5	40	32	2	61
Ø16	16	5.5	35	28	6	48	38	2.3	62

SBA

SDA

SDX

DBS2

DBF2

DBT

FDA

SBA series Pen Cylinder (Single Acting Normal In)

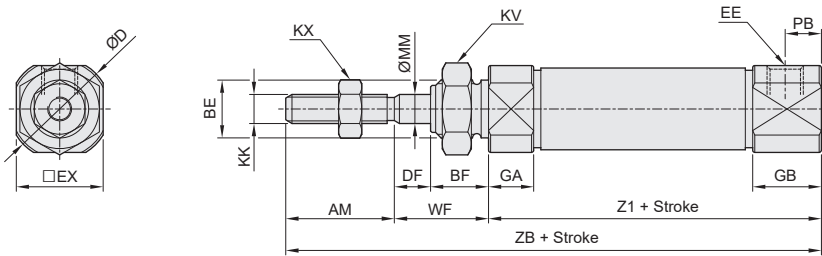
Dimension

CHELIC

Single acting normal in — SBAI



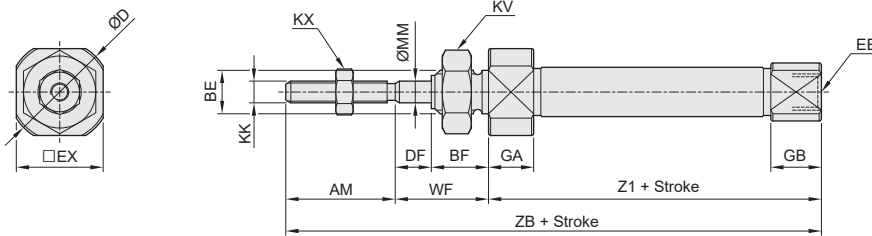
- SBAI Ø10, Ø16



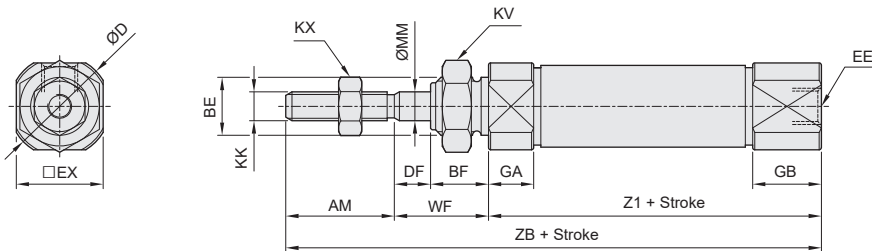
Single acting normal in and Air supply from empennage — SBRI



- SBRI Ø6



- SBRI Ø10, Ø16



Dimension

Bore size (mm)	AM	BE	BF	D	DF	EE	EX	GA	GB	KK	KV	KX	MM	PB	WF	5~15st		16~30st		31~45st		46~60st	
																Z1	ZB	Z1	ZB	Z1	ZB	Z1	ZB
Ø6	15	M6x1.0P	8	9	5	M5x0.8P	8	3	7	M3x0.5P	8	5.5	3	—	13	39.5	67.5	48.5	76.5	52.5	80.5	66.5	94.5
Ø10	15	M8x1.0P	8	14	5	M5x0.8P	12	5.5	9.5	M4x0.7P	13	7	4	5	13	45.5	73.5	53	81	65	93	77	105
Ø16	15	M10x1.0P	8	20	5	M5x0.8P	18	5.5	9.5	M5x0.8P	15	8	5	5	13	45.5	73.5	54	82	65	94	78	106

SBA series Pen Cylinder (Single Acting Normal In)

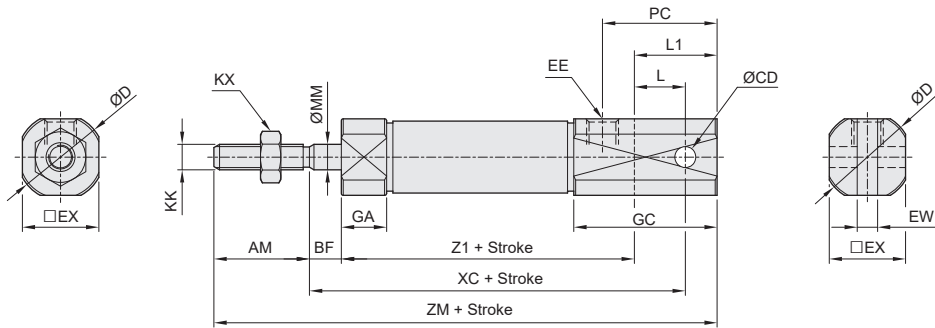
Dimension

CHELIC

Single acting normal in — SBBI



- SBBI Ø10, Ø16



Dimension

Bore size (mm)	AM	BF	CD	D	EE	EW	EX	GA	GC	KK	KX	MM	PC	L	L1	5~15st			16~30st			31~45st			46~60st		
																XC	Z1	ZM	XC	Z1	ZM	XC	Z1	ZM	XC	Z1	ZM
Ø10	15	5	3.3	14	M5x0.8P	3.2	12	5.5	22.5	M4x0.7P	7	4	18	8	13	58.5	45.5	78.5	66	53	86	78	65	98	90	77	110
Ø16	15	5	5	20	M5x0.8P	6.5	18	5.5	27.5	M5x0.8P	8	5	23	10	18	60.5	45.5	83.5	69	54	92	81	66	104	93	78	116

SBA

SDA

SDX

DBS2

DBF2

DBT

FDA

SBAI series Pen Cylinder (Single Acting Normal In)

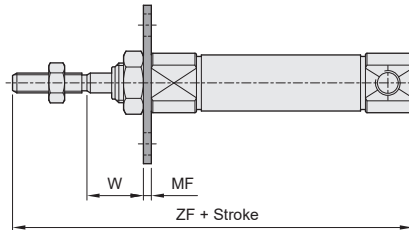
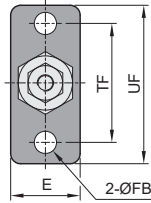
Bracket dimensions-Air supply from empennage

CHELIC

Front flange — FA

SBAI x FA
SBRI x LB

● SBAI, SBRI Ø6 ~ Ø16

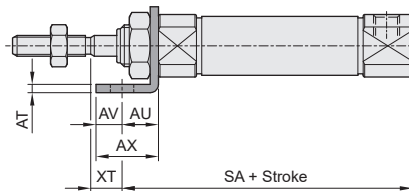
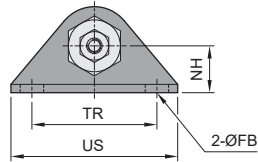


Dimension

Bore size (mm)	E	FB	MF	TF	UF	W	5~15st	16~30st	31~45st	46~60st
							ZF	ZF	ZF	ZF
Ø6	14	4.5	1.6	24	32	11.4	67.5	76.5	80.5	94.5
Ø10	14	4.5	1.6	24	32	11.4	73.5	81	93	105
Ø16	20	5.5	2.3	33	42	10.7	73.5	82	94	106

Single foot — LB

● SBAI, SBRI Ø6 ~ Ø16



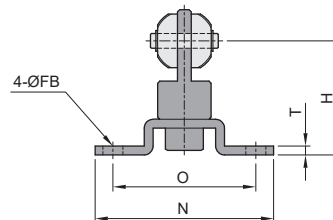
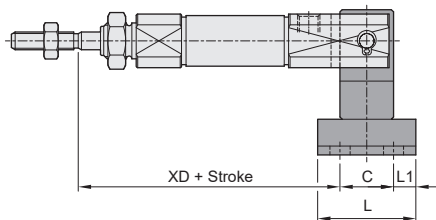
Dimension

Bore size (mm)	AT	AU	AV	AX	FB	NH	TR	US	XT	5~15st	16~30st	31~45st	46~60st
										SA	SA	SA	SA
Ø6	1.6	7	5	12	4.5	9	24	32	6	46.5	55.5	59.5	73.5
Ø10	1.6	7	5	12	4.5	9	24	32	6	52.5	60	72	84
Ø16	2.3	9	6	15	5.5	14	33	42	4	54.5	63	75	87

Pivot bracket — CA

SBBI x CA

● SBBI Ø10, Ø16



Dimension

Bore size (mm)	C	FB	H	L	L1	N	O	T	5~15st	16~30st	31~45st	46~60st
									XD	XD	XD	XD
Ø10	12	4.5	29	22	5	40	32	2	52.5	60	72	84
Ø16	16	5.5	35	28	6	48	38	2.3	52.5	61	73	85

SBRO series Pen Cylinder (Single Acting Normal Out)

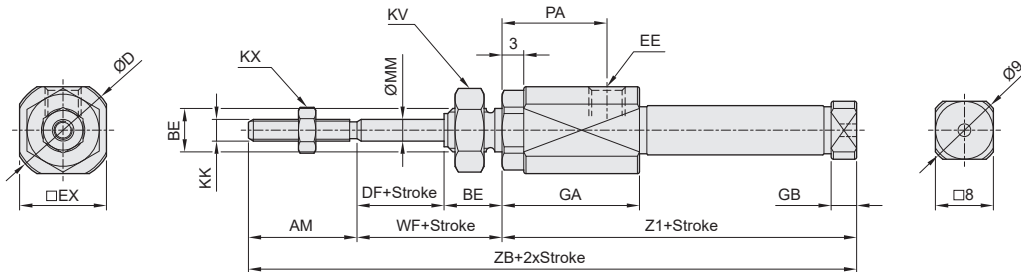
Dimension

CHELIC

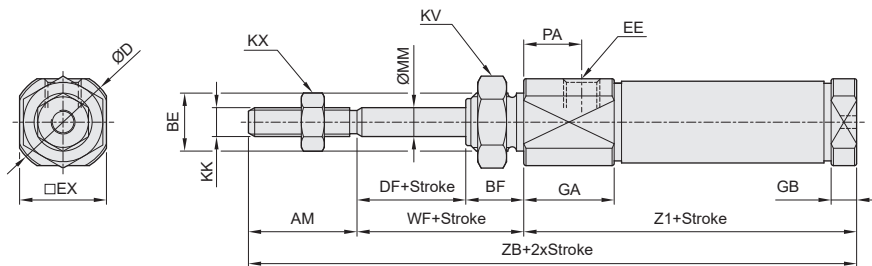
Single acting normal out — SBRO



SBRO Ø6



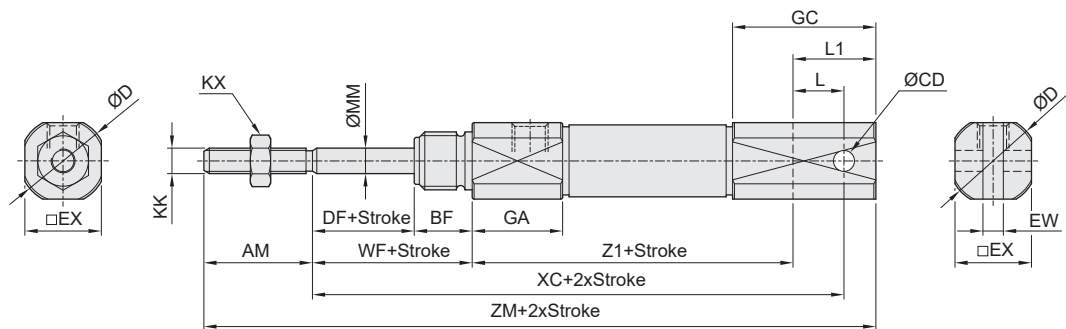
SBRO Ø10, Ø16



Single acting normal out — SBBO



SBBO Ø10, Ø16



Dimension

Bore size (mm)	AM	BE	BF	CD	D	DF	EE	DW	EX	GA	GB	GC	KK	KV	KX	MM	PA	WF	L	L1
Ø6	15	M6x1.0P	8	—	14	5	M5x0.8P	—	12	19	3	—	M3x0.5P	8	5.5	3	14.5	13	—	—
Ø10	15	M8x1.0P	8	3.3	14	5	M5x0.8P	3.2	12	12.5	5.5	18.5	M4x0.7P	11	7	4	8	13	8	13
Ø16	15	M10x1.0P	8	5	20	5	M5x0.8P	6.5	18	12.5	5.5	23.5	M5x0.8P	14	8	5	8	13	10	18

Bore size (mm)	5~15st				16~30st				31~45st				46~60st			
	XC	Z1	ZB	ZM	XC	Z1	ZB	ZM	XC	Z1	ZB	ZM	XC	Z1	ZB	ZM
Ø6	—	51.5	79.5	—	—	60.5	88.5	—	—	64.5	92.5	—	—	78.5	106.5	—
Ø10	69.5	48.5	76.5	89.5	77	56	84	97	89	68	96	109	101	80	108	121
Ø16	71.5	48.5	76.5	94.5	80	57	85	103	92	69	97	115	104	81	109	127

SBA

SDA

SDX

DBS2

DBF2

DBT

FDA

SBRO series Pen Cylinder (Single Acting Normal Out)

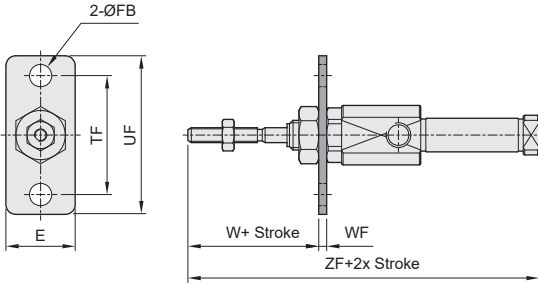
Bracket dimensions

CHELIC

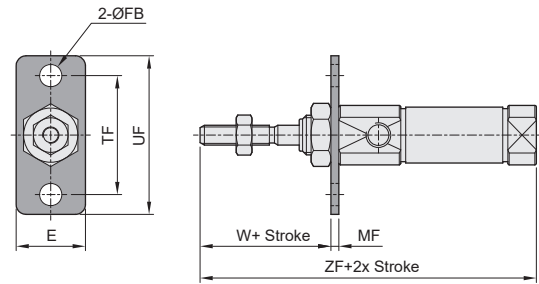
Front flange — FA



SBRO Ø6



SBRO Ø10, Ø16

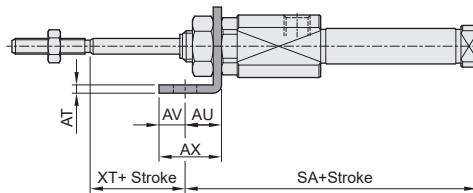
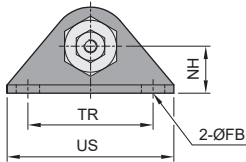


Dimension

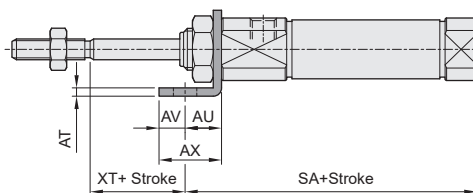
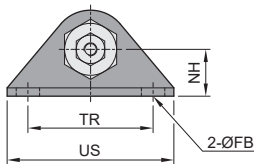
Bore size (mm)	E	FB	MF	TF	UF	W	5~15st	16~30st	31~45st	46~60st
							ZF	ZF	ZF	ZF
Ø6	14	4.5	1.6	24	32	11.4	64.5	73.5	77.5	91.5
Ø10	14	4.5	1.6	24	32	11.4	61.5	69	81	93
Ø16	20	5.5	2.3	33	42	10.7	61.5	70	82	94

Single foot — LB

SBRO Ø6



SBRO Ø10, Ø16



Dimension

Bore size (mm)	AT	AU	AV	AX	FB	NH	TR	US	XT	5~15st	16~30st	31~45st	46~60st
										SA	SA	SA	SA
Ø6	1.6	7	5	12	4.5	9	24	32	6	58.5	67.5	71.5	85.5
Ø10	1.6	7	5	12	4.5	9	24	32	6	55.5	63	75	87
Ø16	2.3	9	6	15	5.5	14	33	42	4	57.5	66	78	90

SBRO series Pen Cylinder (Single Acting Normal Out)

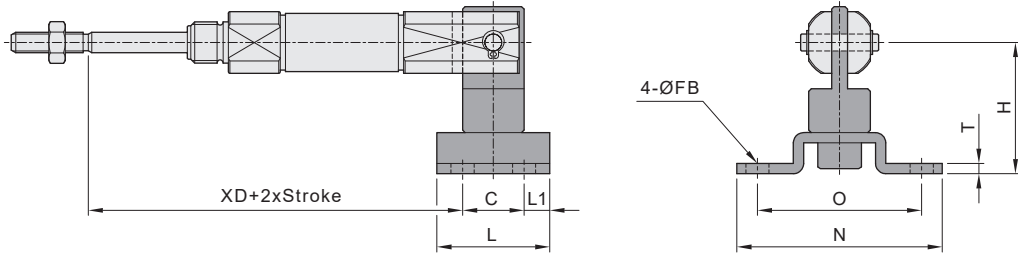
Bracket dimensions

CHELIC

► Pivot bracket — CA



● SBBO Ø10, Ø16



► Dimension

Bore size (mm)	C	FB	H	L	L1	N	O	T	5~15st	16~30st	31~45st	46~60st
									XD	XD	XD	XD
Ø10	12	4.5	29	22	5	40	32	2	63.5	71	83	95
Ø16	16	5.5	35	28	6	48	38	2.3	63.5	72	84	96

SBA

SDA

SDX

DBS2

DBF2

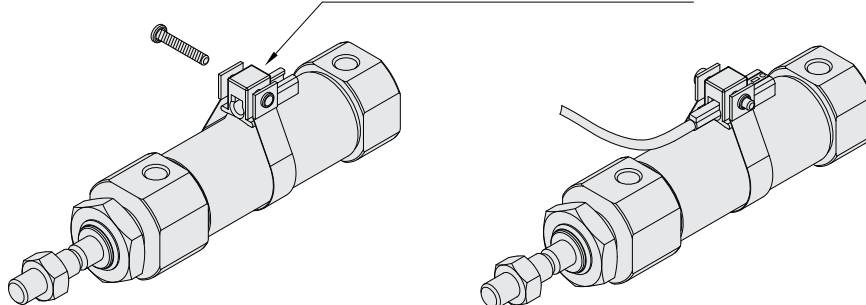
DBT

FDA

► Accessory and assembly

● CS-9D series - Applicable to roud body cylinder

Round the metallic belt to the cylinder body with sensor switch like below images, then screw to the holder and tighten to prevent sensor switch fallen.



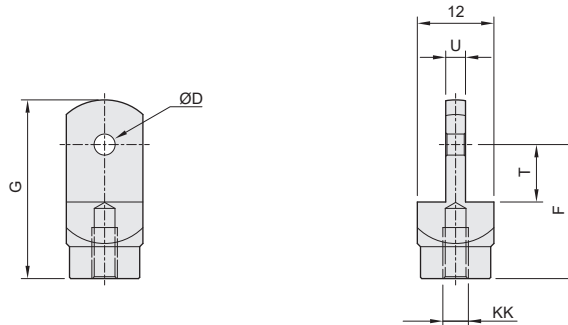
SBA series Pen Cylinder

Dimension-Accessory

CHELIC

Accessories dimensions

- Single knuckle joint

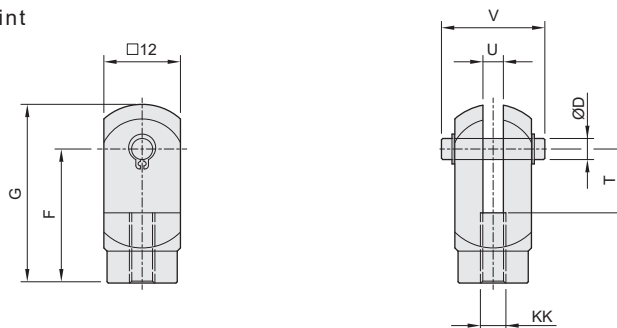


Dimension

Model	Bore size (mm)	D	F	G	KK	T	U
I - M4x0.7	Ø10	3.3	21	28	M4 x 0.7	9	3.1
I - M5x0.8	Ø16	5	25	32	M5 x 0.8	14	6.4

Accessories dimensions

- Double knuckle joint

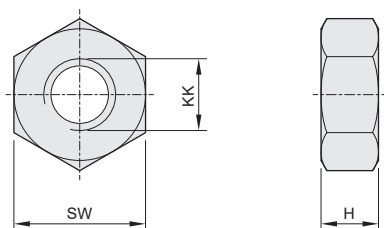


Dimension

Model	Bore size (mm)	D	F	G	KK	T	U	V
Y - M4x0.7	Ø10	3.3	21	28	M4 x 0.7	10	3.2	16.2
Y - M5x0.8	Ø16	5	21	28	M5 x 0.8	10	6.5	16.6

Accessories dimensions

- Mounting nut



Dimension

Model	Bore size (mm)	H	KK	SW
N - M3x0.5	Ø6	2.4	M3 x 0.5	5.5
N - M4x0.7	Ø10	3.2	M4 x 0.7	7
N - M5x0.8	Ø16	4	M5 x 0.8	8
N - M6x1.0	Ø6	4	M6 x 1.0	8
N - M8x1.0	Ø10	4	M8 x 1.0	11
N - M10x1.0	Ø16	4	M10 x 1.0	14

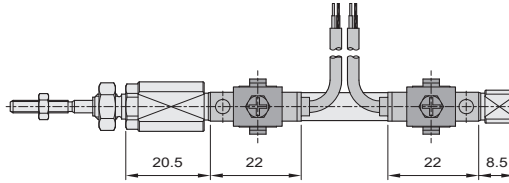
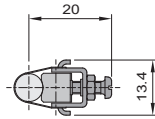
SBA, SBAI(O) series Pen Cylinder

Sensor switch operating range and the setting

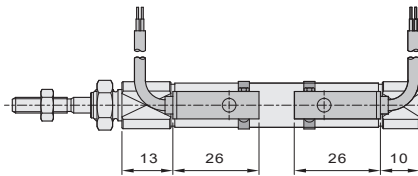
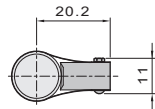
CHELIC

Sensor switch mounting type/ Dimension (Reference)

- SBR Ø6
SBRI(O) Ø6



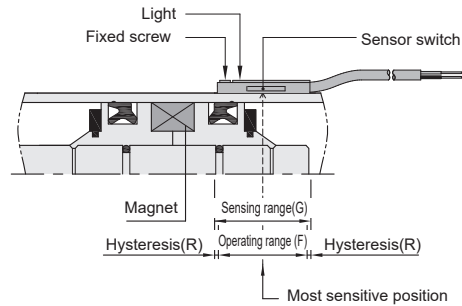
- SBA Ø10, Ø16
SBAI(O) Ø10, Ø16



- Please install sensor switch at front and rear sides of cylinder, it is better to make same direction as line of visible at easy visible position of indicator light.
- Electric wire is arranged following cylinder and fixed to avoid any pulling and dragging affecting the reception of signal.

Sensing range

- Sensor switch is fixed on the cylinder body. The magnetic piston head will activate the Sensor switch when it enters the operating range. It has 0.5mm differential.



Operating range

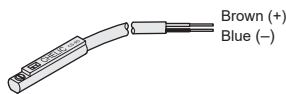
- When piston head moves the switch setting and adjustment will be based on the responding range generated by the magnetic field and the switch. (Please refer to the below table)

Unit: mm

Model	CS-9D(B)		CS-8G	
	Operating range (F)	Hysteresis(R)	Operating range (F)	Hysteresis(R)
Ø 6	2	1	1.5	0.5
Ø 10	3	1	2	0.5
Ø 16	3.5	1	2	0.5

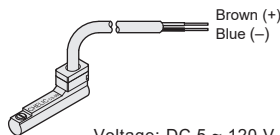
Sensor switch introduction

- CS-9D



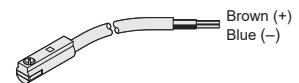
Voltage: DC 5 ~ 120 V
AC 5 ~ 120 V

- CS-9B



Voltage: DC 5 ~ 120 V
AC 5 ~ 120 V

- CS-8G



Voltage: DC 5 ~ 30 V

SBA

SDA

SDX

DBS2

DBF2

DBT

FDA