

# JSG

## Tie Rod Cylinder with Brake

ø40, ø50, ø63, ø80, ø100

With Brake with Lock



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With Brake / With Lock

ULK□

JSK2/  
JSM2

JSG

JSC3,  
JSC4

USSD

UFCD

USC

Cylinder  
Switch

Ending

With Brake / With Lock

ULK□

JSK2/  
JSM2

JSG

JSC3,  
JSC4

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UFCD

USC

Cylinder  
Switch

Ending

## Inheriting the excellent DNA of JSC3 Evolved to be more compact and easier to use

The brake mechanism of the JSC3 series, which has a reputation for high stopping accuracy, strong holding force, and outstanding reliability, is installed as is on the general purpose cylinder SCG series. Brake equipped tie-rod cylinder JSG series inheriting high reliability. (ø40 to ø100)



### Safety

Ensures safety of workpieces, etc., even during power outages or accidents.

### Energy Saving

No power such as electricity or air required while braking/locking.

### Reliable and proven brake mechanism

The brake unit adopts the same mechanism as the renowned JSC3 Series. Possesses reliable durability.

### Strong rod holding force

Original lock mechanism provides a strong holding force equivalent to twice the thrust (at 0.4 MPa Operating Pressure).

### High response with valve

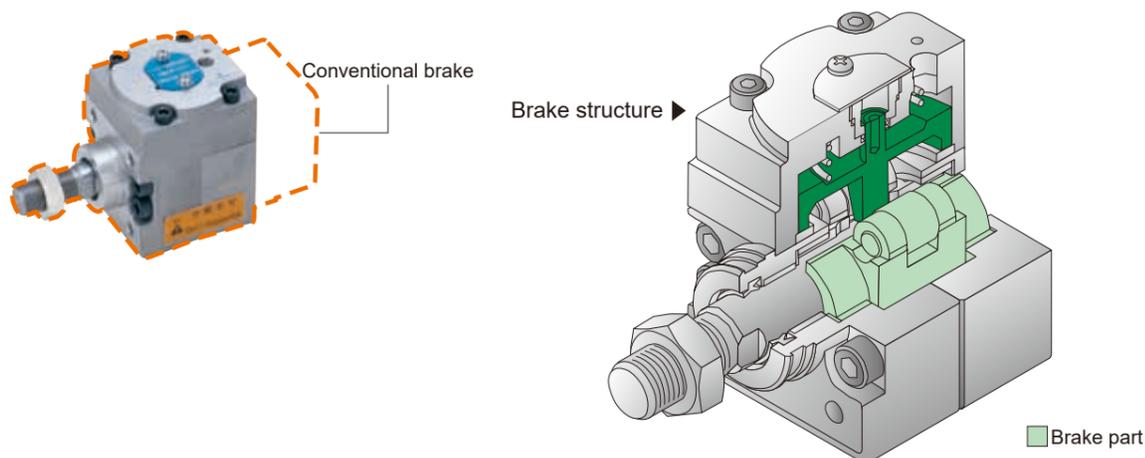
Brake release valve can be directly included with the brake. Improves brake response and positioning accuracy.

### Lightweight

Achieved an average of 17% weight reduction compared to conventional cylinders.

### Compact and reliable brake unit

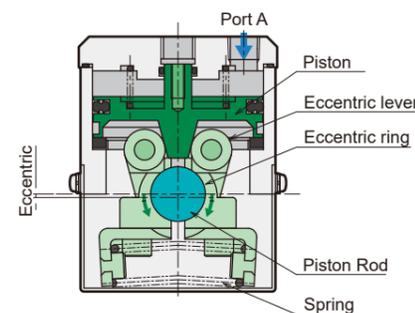
Overall length is shorter compared to JSC3, reducing installation space.



### Operating Principle

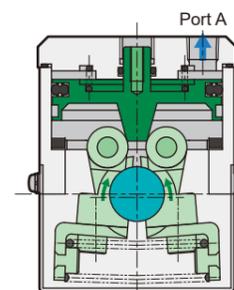
#### Brake Release Operating Principle

When air is supplied from port A, the lower piston is pushed, opening the lever, and the eccentric rings directly connected to the lever rotate in the direction of their respective arrows, freeing the Piston Rod.



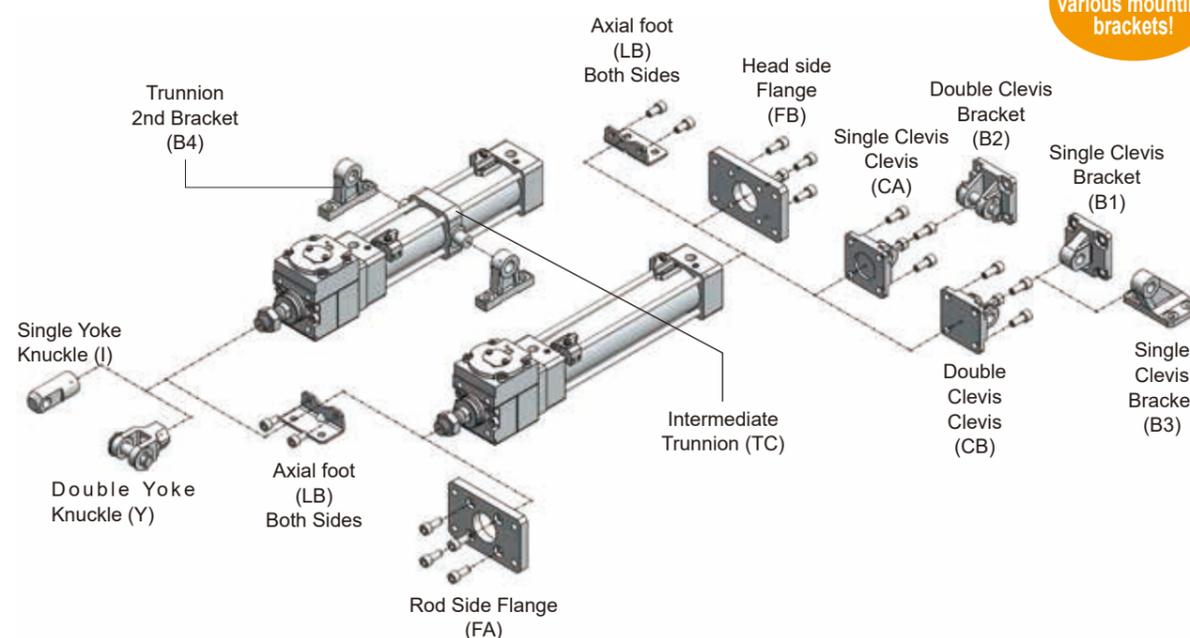
#### Brake Activation Operating Principle

When air is exhausted from port A, the eccentric rings rotate in the direction of their respective arrows due to spring force, generating an eccentric load on the Piston Rod and braking the Piston Rod.



### Abundant Mounting Brackets

Achieves high design flexibility with a wide variety of mounting brackets.



### JSG Series Product System

Model Variations	Bore Size					Stroke (mm)												
	ø40	ø50	ø63	ø80	ø100	25	50	75	100	150	200	250	300	350	400	450	500	
Standard Type <b>JSG</b>	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
With Brake Release Valve <b>JSG-V</b>	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●

With Brake / With Lock

ULK□

JSK2/  
JSM2

JSG

JSC3,  
JSC4

USSD

UFCD

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Cylinder  
Switch

Ending

With Brake / With Lock

ULK□

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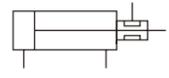
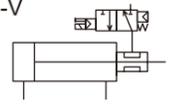
UFCD

USC

Cylinder  
Switch

Ending

●: Standard, ◎: Option, ○: Custom Products, ■: Not available

Variation	Model Number Circuit Diagram Code	Bore Size (mm)	Standard Stroke (mm)												Min Stroke	Max Stroke	Producible Stroke	Intermediate Stroke	Mounting Type										Cushion		Option		Accessories						Page
			25	50	75	100	150	200	250	300	350	400	450	500					Basic Type	Axial Foot Type	Rod side Flange Type	Head Side Flange Type	Single Clevis Type	Double Clevis Type	Rod Side Trunnion Type	Head Side Trunnion Type	Intermediate Trunnion Type	Both Sides Air Cushion	Both Sides Rubber Cushion	Bellows (100 °C)	Piston Rod Material Stainless Steel	Single Knuckle	Double Knuckle	Single Bracket	Double Yoke Bracket	Single Bracket	Trunnion Type 2nd Bracket	Switch	
			00	LB	FA	FB	CA	CB	TA	TB	TC	B	D	J					M	I	Y	B1	B2	B3	B4														
Double Acting/ Single Rod Type	JSG 	ø40	●	●	●	●	●	●	●	●	●	●	●	1	600	800	1	●	●	●	●	●	●	●	●	●	●	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	376	
		ø50, ø63	●	●	●	●	●	●	●	●	●	●	●	●	1	1200																							
		ø80	●	●	●	●	●	●	●	●	●	●	●	●	1	700		1400																					
		ø100	●	●	●	●	●	●	●	●	●	●	●	●	1	800		1500																					
Double Acting with Brake Release Valve	JSG-V 	ø40	●	●	●	●	●	●	●	●	●	●	●	1	600	800	1	●	●	●	●	●	●	●	●	●	●	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	376	
		ø50, ø63	●	●	●	●	●	●	●	●	●	●	●	●	1	1200																							
		ø80	●	●	●	●	●	●	●	●	●	●	●	●	1	700		1400																					
		ø100	●	●	●	●	●	●	●	●	●	●	●	●	1	800		1500																					

With Brake / With Lock

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ULK□

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JSK2/  
JSM2

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JSG

JSG

JSC3,  
JSC4

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USSD

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UFCD

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USC

USC

Cylinder  
Switch

Cylinder  
Switch

Ending

Ending



Tie Rod Cylinder with Brake, Double Acting Single Rod Type / Double Acting with Brake Release Valve

# JSG, JSG-V Series

● Bore Size: ø40, ø50, ø63, ø80, ø100

● Double Acting Type ● Double Acting, with valve for brake release

Circuit Diagram Code



# JSG, JSG-V Series

Model No. Notation

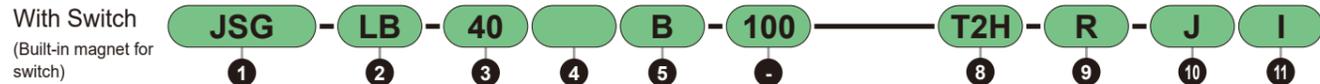
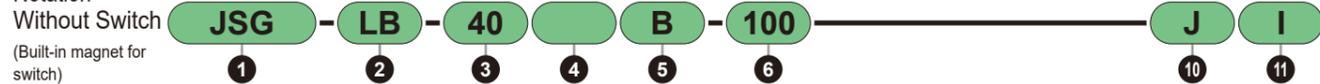
\*Lead wire length

Code	Content
Blank	1 m (Standard)
3	3 m (Option)
5	5 m (Option)

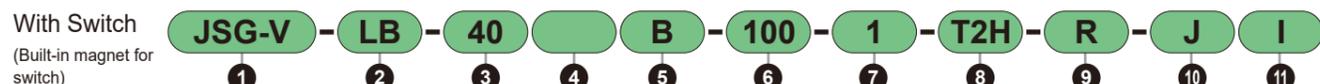
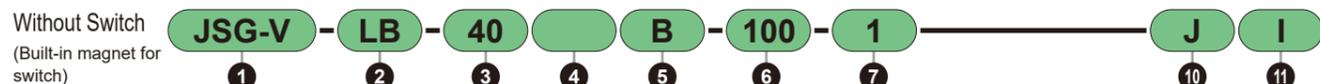
Example) Lead wire length  
1 m T0H<sup>3</sup>  
3 m T0H<sup>3</sup>  
5 m T0H<sup>5</sup>

Model No. Notation

● Without valve



● With Brake Release Valve



Model Number Mounting Type Bore Size Piping thread type Cushion Stroke Valve voltage Switch Model Number of Switches Options Accessories

## 1 Model No.

Code	Description
JSG	Double Acting Type
JSG-V	Double Acting with Brake Release Valve

## 2 Mounting Type

Mounting brackets are included with the product and shipped. However, the rod side flange for trunnion and bellows equipped types is shipped assembled.

Code	Content
00	Basic Type
LB	Axial Foot Type
FA	Rod Side Flange Type
FB	Head Side Flange Type
CA	Single clevis type
CB	Double Clevis Type (Pin and Split Pin Attached)
TA	Rod side trunnion type
TB	Head side trunnion type
TC	Intermediate Trunnion Type

## 3 Bore Size (mm)

Code	Contents
40	ø40
50	ø50
63	ø63
80	ø80
100	ø100

## 4 Piping thread type

Code	Content
Blank	Rc Thread
N	NPT thread (Custom item)
G	G thread (Custom item)

## 5 Cushion

Code	Content
B	Both Sides Air Cushion (Basic type)
D	Both Sides Rubber Cushion

Note: Rubber cushion type has a longer overall length than air cushion.

## 6 Stroke (mm)

Bore Size	Stroke	Intermediate Stroke
ø40	1 to 600	Every 1 mm
ø50		
ø63		
ø80	1 to 700	
ø100	1 to 800	

\*1: If the Max Stroke is exceeded, the product specifications may not be met depending on the conditions, so please consult us. Also, please refer to Intro 29.

\*2: Refer to P. 379, 380 for the Min Stroke with switch.

## 7 Valve voltage

Code	Content
1	100 VAC
2	200 VAC
3	24 VDC
4	12 VDC

Note: Valve voltage can be selected only for JSG-V (with brake valve).

## 8 Switch Model No.

For switch details, refer to P. 1457. Switches are shipped with the product.

Contact	Indicator LED Special Function	Wiring (Output)	Load Voltage (V)		Load Current (mA)		Lead wire *1	
			AC	DC	AC	DC	Straight	L-shape
Solid State	1-Color	2-wire	85 to 265	-	5 to 100	-	T1H□	T1V□
		3-wire (NPN)	-	10 to 30	-	5 to 20 *2	T2H□	T2V□
		3-wire (PNP)	-	30 or less	-	100 or less	T3H□	T3V□
	2-color	2-wire	-	24 ± 10%	-	5 to 20	T2WH□	T2WV□
		3-wire (NPN)	-	30 or less	-	50 or less	T3WH□	T3WV□
		For 2-color AC Magnetic Field	-	24 ± 10%	-	5 to 20	T2YD□	-
Contact	1-Color Without Indicator Lamp	2-wire	110	12/24	7 to 20	5 to 50	T0H□	T0V□
		1-Color	110	5/12/24	20 or less	50 or less	T5H□	T5V□
	1-Color	110/220	12/24	7 to 20 / 7 to 10	5 to 50	T8H□	T8V□	

\*1: Enter the code selected in the "Lead wire length" table into "□" of the Switch Model.

\*2: The maximum load current of 20 mA mentioned above is at 25°C. If the switch operating Ambient Temperature is higher than 25°C, it will be lower than 20 mA. (At 60°C, it will be 5 to 10 mA.)

\*3: Switches other than the above switch model numbers are also available. (Custom Product) For details, refer to P. 1457.

## 9 Number of Switches

Code	Content
R	With 1 pc on rod side
H	With 1 pc on head side
D	With 2 pcs
T	With 3 pcs

Note: When selecting 2 mounting style TA or TB, the switch quantity is limited to "H" (1 on head side) for TA, and "R" (1 on rod side) for TB.

## 10 Option

Code	Content	Maximum Ambient Temperature	
		Instantaneous Ambient Temperature	
J	Bellows	100°C	200°C
M	Piston Rod material: Stainless Steel		

## About specifications of custom products

For details, please refer to P. 406 to 409.

Code	Description
-XK□	Mounting Bracket Rotational Assembly
-XAQ□	Trunnion position fixed
-XP7	Knuckle fixed by pin driving
-XJ9	Without Bellows
-A2	With 2 Rod Nuts
Rod End thread custom order	Refer to Ending 11.

Model No. Ex.)

JSG-..... - **XK□**

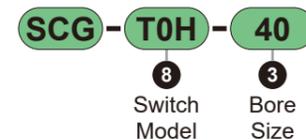
## 11 Accessories

Code	Content
I	Single knuckle
Y	Double Knuckle (Pin and Split Pin Attached)
B1	Single bracket
B2	Double Yoke Bracket (Pin and Split Pin Attached)
B3	Single bracket
B4	Trunnion Type 2nd Bracket (2 pcs/set)

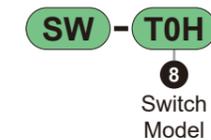
Note: "I" and "Y" cannot be selected at the same time.

## Switch Individual Model No. Notation

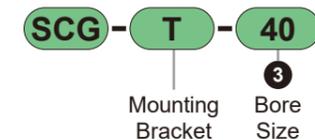
● Switch body+Mounting bracket set



● Switch Body Only



● Switch mounting bracket set



Note: If using environmentally compatible T-type switches, please consult us separately.

Specifications

Item	JSG					JSG-V					
	mm	ø40	ø50	ø63	ø80	ø100	ø40	ø50	ø63	ø80	ø100
Bore Size	mm	ø40	ø50	ø63	ø80	ø100	ø40	ø50	ø63	ø80	ø100
Actuation method		Double Acting Type					Double Acting Type with Valve				
Operating Fluid		Compressed Air					Compressed Air				
Max Operating Pressure	MPa	1.0					0.7				
Min Operating Pressure	MPa	0.3					0.3				
Proof Pressure	MPa	1.6					1.6				
Ambient Temperature	°C	-10 to 60 (No freezing)					-10 to 60 (No freezing)				
Port Size	Brake Part	Rc1/8	Rc1/4	Rc3/8			Rc1/8	Rc1/4			
	Cylinder Part	Rc1/4	Rc3/8	Rc 1/2			Rc1/4	Rc3/8	Rc1/2		
Stroke tolerance	mm	+1.4 (Up to 1000), +1.8 (Up to 1500)					+1.4 (Up to 1000), +1.8 (Up to 1500)				
		+1.0 (Up to 360), +1.4 (Up to 1000), +1.8 (Up to 1500)					+1.0 (Up to 360), +1.4 (Up to 1000), +1.8 (Up to 1500)				
Operating Piston Speed	mm/s	50 to 1000 (Please use within the allowable absorbed energy.)					50 to 1000 (Please use within the allowable absorbed energy.)				
Cushion		Air cushion/rubber cushion can be selected					Air cushion/rubber cushion can be selected				
Effective air cushion length	mm	8.6	13.4	13.4	15.4	15.4	8.6	13.4	13.4	15.4	15.4
Lubrication		Not required (When lubricating, use turbine oil Class 1 ISO VG32)					Not required (When lubricating, use turbine oil Class 1 ISO VG32)				
Holding Force	N	980	1569	2451	3922	6178	980	1569	2451	3922	6178
Allowable Absorbed	With Rubber Cushion	0.9	1.6	1.6	3.3	5.8	0.9	1.6	1.6	3.3	5.8
	With Air Cushion	3.7	8.0	14.4	25.4	45.6	3.7	8.0	14.4	25.4	45.6
Energy	J	3.7	8.0	14.4	25.4	45.6	3.7	8.0	14.4	25.4	45.6

Brake Valve Electrical Specifications

Item	Specifications		
Rated voltage (V)	100 AC (50/60 Hz)	200 AC (50/60 Hz)	24 DC
Starting current (A)	0.056/0.044	0.028/0.022	0.075
Holding current (A)	0.028/0.022	0.014/0.011	0.075
Power consumption (W)	1.8/1.4		1.8
Heat Resistance Class	Class B (Molded Coil)		

\*1: 100/200 VAC coils can be used at 110/220 VAC (60 Hz).

\*2: Valve specifications are the same as standard 4KB2. For details, please refer to "Directional Control Valve ①" (No. RJ-011AA). However, the model number at the time of order will be different, so please contact us.

Stroke

Bore Size (mm)	Standard Stroke (mm)	Max Stroke (mm)	Manufacturable Stroke (mm)	Min Stroke (mm)
ø40	25, 50, 75, 100	600	800	1
ø50	150, 200, 250		1200	
ø63	300, 350, 400	700	1400	
ø80	450, 500		1500	
ø100		800	1500	

\*1: If the Max Stroke is exceeded, product specifications may not be met depending on the conditions, so please consult us. Also, please refer to Intro 29.

\*2: Intermediate strokes can be manufactured in 1 mm increments.

\*3: Minimum stroke varies depending on the switch mounting method. Please refer to the minimum stroke with switch on P. 379, 380.

\*4: With bellows, the manufacturable stroke is as follows.

- ø40: 500 mm
- ø50, ø63: 600 mm
- ø80, ø100: 750 mm

Minimum stroke with switch

●T0/T5 type switch

Number of Switches	Different Surface Mounting	Same Surface Mounting	Intermediate Trunnion Mounting	Rod Side Trunnion Mounting	Head Side Trunnion Mounting
	2	1	2	1	2
ø32	20 (18)	20 (10)	70 (40)	100 (70)	100 (70)
ø40	20 (19)	20 (10)	55 (40)	100 (70)	100 (70)
ø50	21 (19)	21 (10)	21 (19)	102 (72)	102 (72)
ø63	21 (20)	21 (11)	21 (20)	107 (77)	107 (77)
ø80	21 (21)	20 (11)	21 (21)	117 (87)	117 (87)
ø100	21 (21)	19 (11)	21 (21)	126 (96)	126 (96)

Note: Note: ( ) indicates T□V (lead wire L-type).

●T8 type switch

Number of Switches	Different Surface Mounting	Same Surface Mounting	Intermediate Trunnion Mounting	Rod Side Trunnion Mounting	Head Side Trunnion Mounting
	2	1	2	1	2
ø32	19 (18)	19 (10)	67 (31)	97 (61)	97 (61)
ø40	19 (19)	19 (10)	52 (31)	97 (61)	97 (61)
ø50	19 (19)	18 (10)	19 (19)	97 (61)	97 (61)
ø63	20 (20)	18 (11)	20 (20)	102 (66)	102 (66)
ø80	21 (21)	17 (11)	21 (21)	112 (76)	112 (76)
ø100	21 (21)	17 (11)	21 (21)	121 (85)	121 (85)

Note: Note: ( ) indicates T□V (lead wire L-type).

●T2/T3 type switch

Number of Switches	Different Surface Mounting	Same Surface Mounting	Intermediate Trunnion Mounting	Rod Side Trunnion Mounting	Head Side Trunnion Mounting
	2	1	2	1	2
ø32	20 (11)	20 (6)	70 (40)	100 (70)	100 (70)
ø40	20 (11)	20 (6)	55 (40)	100 (70)	100 (70)
ø50	21 (11)	21 (6)	21 (11)	102 (72)	102 (72)
ø63	21 (12)	21 (7)	21 (12)	107 (77)	107 (77)
ø80	20 (12)	20 (7)	20 (12)	117 (87)	117 (87)
ø100	19 (12)	19 (7)	19 (12)	126 (96)	126 (96)

\*1: ( ) indicates T□V (L-shaped lead wire type).

\*2: If the stroke is 15 mm or less, two switches may turn ON simultaneously. In this case, adjust the switch mounting positions so that they are further apart from each other.

●T1 type switch

Number of Switches	Different Surface Mounting	Same Surface Mounting	Intermediate Trunnion Mounting	Rod Side Trunnion Mounting	Head Side Trunnion Mounting
	2	1	2	1	2
ø32	19 (11)	19 (6)	68 (38)	98 (68)	98 (68)
ø40	19 (11)	19 (6)	53 (38)	98 (68)	98 (68)
ø50	20 (11)	20 (6)	20 (11)	100 (70)	100 (70)
ø63	20 (12)	20 (7)	20 (12)	105 (75)	105 (75)
ø80	19 (12)	19 (7)	19 (12)	115 (85)	115 (85)
ø100	18 (12)	18 (7)	18 (12)	124 (94)	124 (94)

\*1: ( ) indicates T□V (L-shaped lead wire type).

\*2: If the stroke is 15 mm or less, two switches may turn ON simultaneously. In this case, adjust the switch mounting positions so that they are further apart from each other.

With Brake / With Lock

With Brake / With Lock

ULK□

ULK□

JSK2/ JSM2

JSK2/ JSM2

JSG

JSG

JSC3, JSC4

JSC3, JSC4

USSD

USSD

UFCD

UFCD

USC

USC

Cylinder Switch

Cylinder Switch

Ending

Ending

Minimum stroke with switch

●T2W/T3W type switch

Number of Switches	Different Surface Mounting		Same Surface Mounting		Intermediate Trunnion Mounting		Rod Side Trunnion Mounting	Head Side Trunnion Mounting
	2	1	2	1	2	1	1	
ø32	23 (12)	23 (8)	75 (45)	105 (75)	105 (75)	53 (38)	53 (38)	
ø40	23 (12)	23 (8)	60 (45)	105 (75)	105 (75)	53 (38)	53 (38)	
ø50	23 (13)	23 (8)	23 (13)	107 (77)	107 (77)	51 (36)	53 (38)	
ø63	23 (13)	23 (8)	23 (13)	112 (82)	112 (82)	56 (41)	58 (43)	
ø80	22 (14)	22 (8)	22 (14)	122 (92)	122 (92)	55 (40)	62 (47)	
ø100	22 (14)	22 (8)	22 (14)	131 (101)	131 (101)	66 (51)	72 (57)	

\*1: ( ) indicates T□V (L-shaped lead wire type).

\*2: If the stroke is 15 mm or less, two switches may turn ON simultaneously. In this case, adjust the switch mounting positions so that they are further apart from each other.

●T2YD type switch

Number of Switches	Different Surface Mounting		Same Surface Mounting		Intermediate Trunnion Mounting		Rod Side Trunnion Mounting	Head Side Trunnion Mounting
	2	1	2	1	2	1	1	
ø32	23	23	75	105	105	53	53	
ø40	23	23	60	105	105	53	53	
ø50	23	23	23	107	107	51	53	
ø63	23	23	23	112	112	56	58	
ø80	22	22	22	122	122	55	62	
ø100	22	22	22	131	131	66	72	

Weight Table

Unit: kg

Bore Size (mm)	Product weight when stroke = 0 mm						Stroke: Added weight per 50 mm	Switch Weight	Switch Mounting Bracket Weight	Accessory Weight	
	Basic type (00)	Foot Type (LB)	Flange Type (FA, FB)	Single clevis type (CA)	Double Clevis Type (CB)	Trunnion Type (TA, TB, TC)				I	Y
ø40	1.75	1.89	2.16	1.94	1.94	2.09	0.17	Refer to the Weight listed in the Switch Specifications on P. 1457.	0.024	0.09	0.14
ø50	2.91	3.07	3.54	3.32	3.32	3.40	0.23		0.022	0.20	0.33
ø63	3.94	4.28	4.96	4.49	4.51	4.82	0.25		0.022	0.20	0.33
ø80	7.81	8.24	9.38	9.08	9.09	9.30	0.40		0.026	0.52	0.96
ø100	12.08	12.94	14.40	13.80	13.83	14.65	0.51		0.024	0.48	0.92

(Example) Product Weight of JSG-LB-50B-200-T0H-D-Y

Product weight for 0 mm stroke ..... 3.07 kg  
 Additional weight for 200 mm stroke ..... 0.23×200/50=0.92 kg  
 Weight of 2 T0H switches ..... 0.018×2=0.036 kg  
 Weight of 2 mounting brackets ..... 0.022×2=0.044 kg  
 Weight of rod clevis ..... 0.33 kg  
 Product weight ..... 3.07+0.92+0.036+0.044+0.33=4.4 kg

Theoretical Thrust Table

(Unit: N)

Bore Size (mm)	Operating Direction	Operating Pressure MPa							
		0.3	0.4	0.5	0.6	0.7	0.8	0.9	1.0
ø40	Push	3.77×10 <sup>2</sup>	5.03×10 <sup>2</sup>	6.28×10 <sup>2</sup>	7.54×10 <sup>2</sup>	8.80×10 <sup>2</sup>	1.01×10 <sup>3</sup>	1.13×10 <sup>3</sup>	1.26×10 <sup>3</sup>
	Pull	3.17×10 <sup>2</sup>	4.22×10 <sup>2</sup>	5.28×10 <sup>2</sup>	6.33×10 <sup>2</sup>	7.39×10 <sup>2</sup>	8.44×10 <sup>2</sup>	9.50×10 <sup>2</sup>	1.06×10 <sup>3</sup>
ø50	Push	5.89×10 <sup>2</sup>	7.85×10 <sup>2</sup>	9.82×10 <sup>2</sup>	1.18×10 <sup>3</sup>	1.37×10 <sup>3</sup>	1.57×10 <sup>3</sup>	1.77×10 <sup>3</sup>	1.96×10 <sup>3</sup>
	Pull	4.95×10 <sup>2</sup>	6.60×10 <sup>2</sup>	8.25×10 <sup>2</sup>	9.90×10 <sup>2</sup>	1.15×10 <sup>3</sup>	1.32×10 <sup>3</sup>	1.48×10 <sup>3</sup>	1.65×10 <sup>3</sup>
ø63	Push	9.35×10 <sup>2</sup>	1.25×10 <sup>3</sup>	1.56×10 <sup>3</sup>	1.87×10 <sup>3</sup>	2.18×10 <sup>3</sup>	2.49×10 <sup>3</sup>	2.81×10 <sup>3</sup>	3.12×10 <sup>3</sup>
	Pull	8.41×10 <sup>2</sup>	1.12×10 <sup>3</sup>	1.40×10 <sup>3</sup>	1.68×10 <sup>3</sup>	1.96×10 <sup>3</sup>	2.24×10 <sup>3</sup>	2.52×10 <sup>3</sup>	2.80×10 <sup>3</sup>
ø80	Push	1.51×10 <sup>3</sup>	2.01×10 <sup>3</sup>	2.51×10 <sup>3</sup>	3.02×10 <sup>3</sup>	3.52×10 <sup>3</sup>	4.02×10 <sup>3</sup>	4.52×10 <sup>3</sup>	5.03×10 <sup>3</sup>
	Pull	1.36×10 <sup>3</sup>	1.81×10 <sup>3</sup>	2.27×10 <sup>3</sup>	2.72×10 <sup>3</sup>	3.17×10 <sup>3</sup>	3.63×10 <sup>3</sup>	4.08×10 <sup>3</sup>	4.54×10 <sup>3</sup>
ø100	Push	2.36×10 <sup>3</sup>	3.14×10 <sup>3</sup>	3.93×10 <sup>3</sup>	4.71×10 <sup>3</sup>	5.50×10 <sup>3</sup>	6.28×10 <sup>3</sup>	7.07×10 <sup>3</sup>	7.85×10 <sup>3</sup>
	Pull	2.14×10 <sup>3</sup>	2.86×10 <sup>3</sup>	3.57×10 <sup>3</sup>	4.29×10 <sup>3</sup>	5.00×10 <sup>3</sup>	5.72×10 <sup>3</sup>	6.43×10 <sup>3</sup>	7.15×10 <sup>3</sup>

Mounting Bracket Model No. Notation

Bore Size (mm)	ø40	ø50	ø63	ø80	ø100
Foot (LB) *1	JSG-LB-40	JSG-LB-50	JSG-LB-63	SCG-LB-80	SCG-LB-100
Flange (FA) (FB) *2	JSG-FA-40	JSG-FA-50	JSG-FA-63	SCG-FA-80	SCG-FA-100
Single Clevis (CA)	SCG-CA-40	SCG-CA-50	SCG-CA-63	SCG-CA-80	SCG-CA-100
Double Yoke Clevis (CB) *3	SCG-CB-40	SCG-CB-50	SCG-CB-63	SCG-CB-80	SCG-CB-100

\*1: Foot (LB) type mounting brackets are 2 pcs./set.

\*2: For flange (FA) for bellows equipped type, please specify "JSG-FA-(Bore Size)-J".

\*3: Includes pin, cotter pin, and flat washer.

\*4: Mounting bolts are included with each mounting bracket.

With Brake / With Lock

With Brake / With Lock

ULK□

ULK□

JSK2/ JSM2

JSK2/ JSM2

JSG

JSG

JSC3, JSC4

JSC3, JSC4

USSD

USSD

UFCD

UFCD

USC

USC

Cylinder Switch

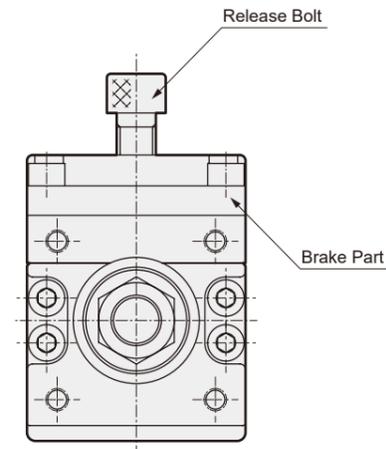
Cylinder Switch

Ending

Ending

## Manual Release Method for Brake Unit

## MEMO



Screwing a bolt into the manual release port (female thread on the upper part of the brake unit) releases the brake. (Excessive screwing of the bolt may cause brake failure. Check the appropriate screw-in depth in the table below.) Always remove the bolt during normal use.

Release Bolt Size

Bore Size	Bolt Thread Diameter	Bolt Length		Appropriate Tightening Amount
		JSG	JSG-V	
ø40	M12×1.75	16 or more	40 or more	3 rotations or less
ø50	M12×1.75	16 or more	40 or more	4 rotations or less
ø63	M14×2	16 or more	40 or more	4 rotations or less
ø80	M16×2	20 or more	40 or more	4.5 rotations or less
ø100	M18×2.5	20 or more	50 or more	5 rotations or less

With Brake / With Lock

With Brake / With Lock

ULK□

ULK□

JSK2/  
JSM2

JSK2/  
JSM2

JSG

JSG

JSC3,  
JSC4

JSC3,  
JSC4

USSD

USSD

UFCD

UFCD

USC

USC

Cylinder  
Switch

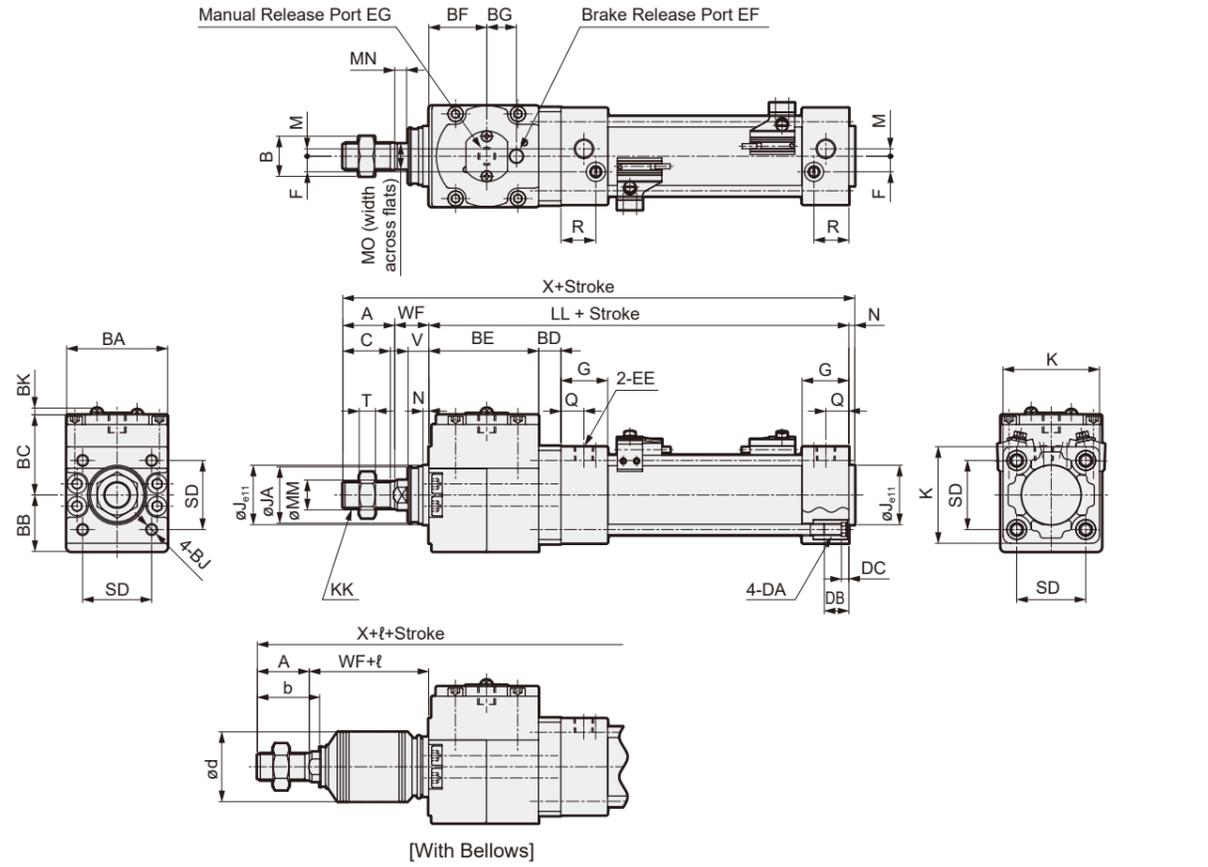
Cylinder  
Switch

Ending

Ending

Dimensional Drawings

● Basic type (00)



Code	Basic Type (00) Basic Dimensions																						
Bore Size (mm)	A	B	BA	BB	BC	BD	BE	BF	BG	BJ	BK	C	DA	DB	DC	EE	EF	EG	F	G	J	JA	K
ø40	30	22	57	31.5	46.5	14	63	32.5	20	M6 Depth 12	4.6	27	M6	16	5	Rc1/4	Rc1/8	M12	9	27	35	31	52
ø50	35	27	68	38	54	15	74	39	20	M8 Depth 12	4.6	32	M8	16	5	Rc1/4	Rc1/8	M12	10.5	31.5	40	38	65
ø63	35	27	78	43	59	15	88	44.5	27	M8 Depth 14	4.6	32	M8	16	5	Rc3/8	Rc1/4	M14	12	31.5	45	38	75
ø80	40	32	98	53	72.5	23	108	54.5	27	M10 Depth 16	4.6	37	M10	16	5	Rc3/8	Rc1/4	M16	14	38	45	43	95
ø100	40	41	118	63	80.5	22.5	128.5	65.5	35	M10 Depth 18	4.6	37	M10	16	5	Rc 1/2	Rc3/8	M18	15	38	55	51	114

Code	With Bellows													
Bore Size (mm)	KK	LL <sup>*1</sup>	M	MM	MN	MO	N	Q	R	SD	T	V	WF	X <sup>*1</sup>
ø40	M14x1.5	161 (167)	4	16	6	14	4	14	19	38	8	13	21	216 (222)
ø50	M18x1.5	183 (191)	5	20	8	17	4	15.5	23.5	46.5	11	14	23	245 (253)
ø63	M18x1.5	197 (205)	9	20	8	17	4	16.5	21.5	56.5	11	14	23	259 (267)
ø80	M22x1.5	245 (255)	11.5	25	11	22	4	19	28	72	13	20	32	321 (331)
ø100	M26x1.5	265 (275)	17	30	13	27	4	19	28	89	16	20	32	341 (351)

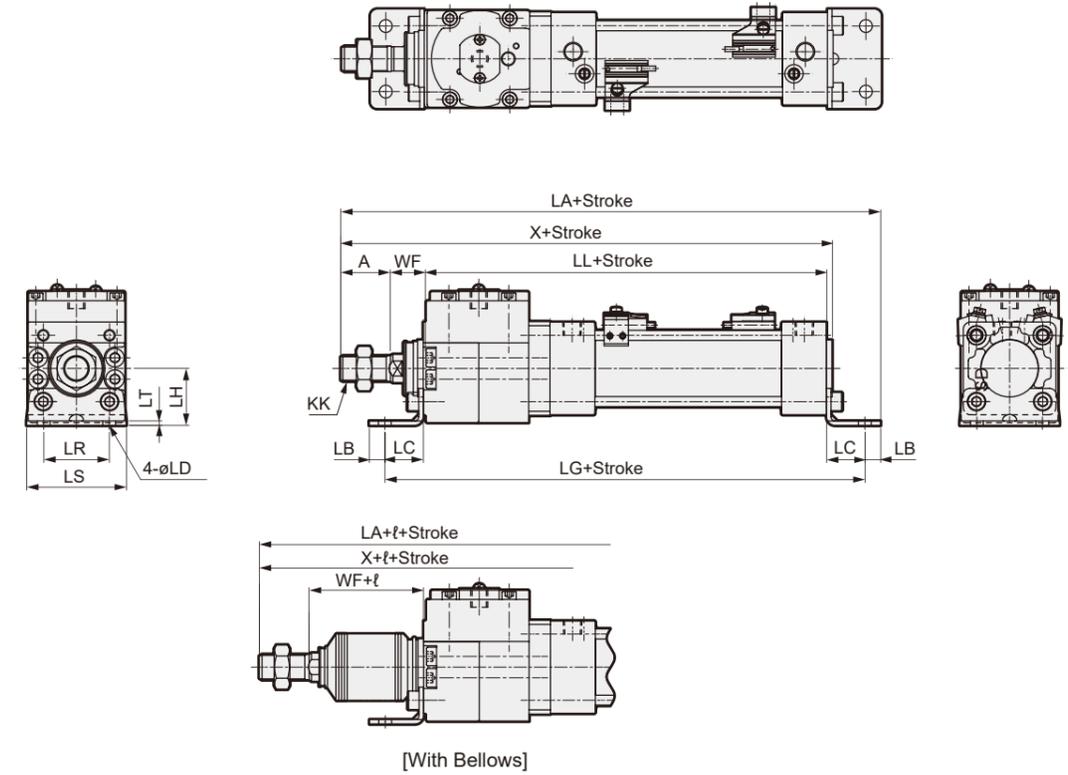
  

Code	With Bellows															
Bore Size (mm)	A	b	d	WF	ℓ											
					50 or less	Over 50 to 100 or Less	Over 100 to 150 or Less	Over 150 to 200 or Less	Over 200 to 300 or Less	Over 300 to 400 or Less	Over 400 to 500 or Less	Over 500 to 600 or Less	Over 600 up to 700	Over 700 up to 750	Over 750 up to 800	Over 800
ø40	30	35	40	21	30	43	55	68	93	118	143	0.35×Stroke - 32				
ø50	35	42	47	23	31	44	56	69	94	119	144	0.35×Stroke - 41				
ø63	35	42	47	23	31	44	56	69	94	119	144	0.35×Stroke - 41				
ø80	40	50	53	32	29	42	54	67	92	117	142	167	192	204	217	0.35×Stroke - 63
ø100	40	52.5	61	32	29	42	54	67	92	117	142	167	192	204	217	0.35×Stroke - 63

\*1: Dimensions in ( ) indicate the case of rubber cushion type.  
 \*2: For dimensions with each switch, refer to P. 404.  
 \*3: For outline dimensions of models with valve (JSG-V), please refer to P. 398.

Dimensional Drawings

● Axial Foot Type (LB)



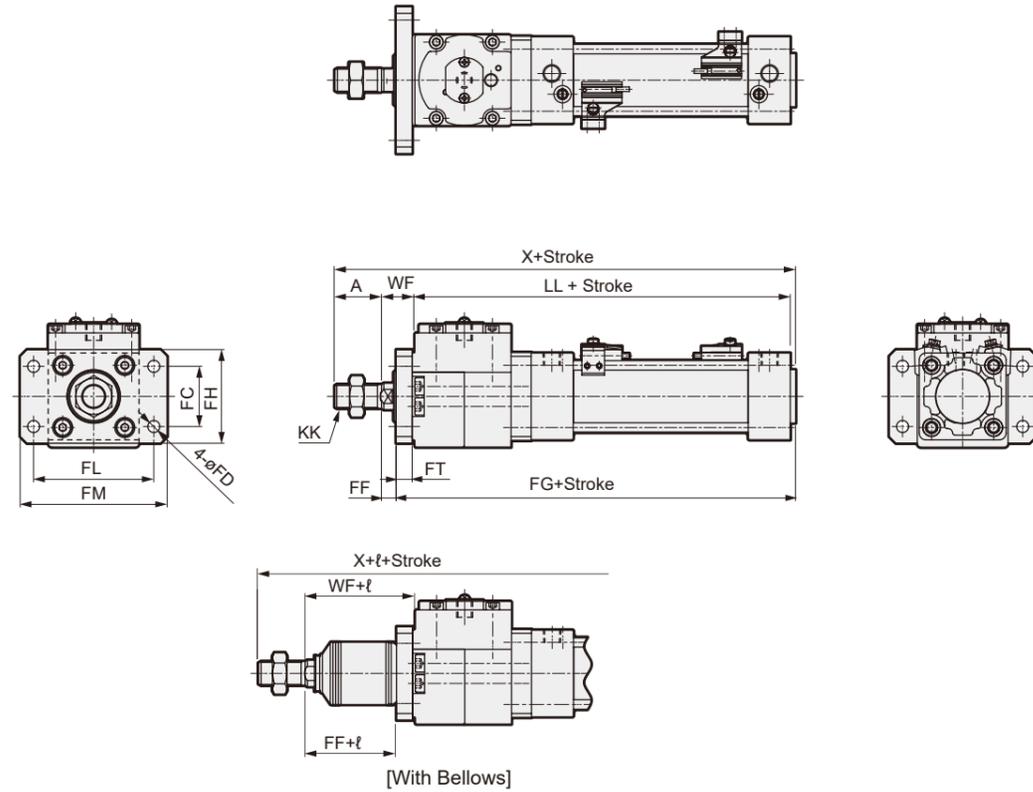
Code	Axial Foot Type (LB) Mounting Dimensions													
Bore Size (mm)	A	LA <sup>*1</sup>	LB	LC	LD	LG <sup>*1</sup>	LH	LR	LS	LT	KK	LL <sup>*1</sup>	WF	X <sup>*1</sup>
ø40	30	247 (253)	11	24	9	209 (215)	33	38	55	3.2	M14x1.5	161 (167)	21	216 (222)
ø50	35	279 (287)	11	27	9	237 (245)	40	46	70	3.2	M18x1.5	183 (191)	23	245 (253)
ø63	35	296 (304)	14	27	12	251 (259)	48	56	80	4.5	M18x1.5	197 (205)	23	259 (267)
ø80	40	361 (371)	14	30	12	305 (315)	55	72	95	4.5	M22x1.5	245 (255)	32	321 (331)
ø100	40	385 (395)	16	32	14	329 (339)	65	89	114	6	M26x1.5	265 (275)	32	341 (351)

Code	With Bellows												
Bore Size (mm)	50 or less	Over 50 to 100 or Less	Over 100 to 150 or Less	Over 150 to 200 or Less	Over 200 to 300 or Less	Over 300 to 400 or Less	Over 400 to 500 or Less	Over 500 to 600 or Less	Over 600 up to 700	Over 700 up to 750	Over 750 up to 800	Over 800	
													ℓ
ø40	30	43	55	68	93	118	143	0.35×Stroke - 32					
ø50	31	44	56	69	94	119	144	169	0.35×Stroke - 41				
ø63	31	44	56	69	94	119	144	169	0.35×Stroke - 41				
ø80	29	42	54	67	92	117	142	167	192	204	217	0.35×Stroke - 63	
ø100	29	42	54	67	92	117	142	167	192	204	217	0.35×Stroke - 63	

\*1: Dimensions in ( ) indicate the case of rubber cushion type.  
 \*2: For dimensions with each switch, refer to P. 404.  
 \*3: For outline dimensions of models with valve (JSG-V), please refer to P. 398.

●Rod Side Flange Type (FA)



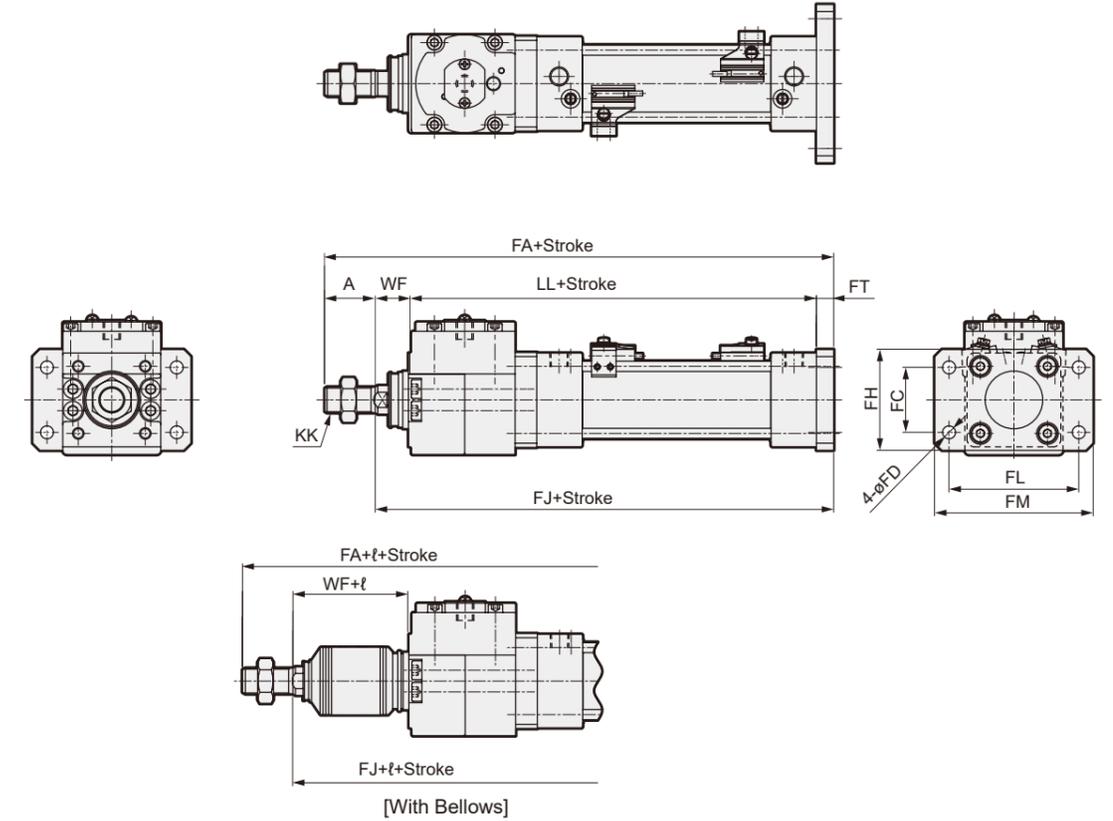
Code	Rod Side Flange Type (FA) Mounting Dimensions												
Bore Size (mm)	A	FC	FD	FF	FG <sup>*1</sup>	FH	FL	FM	FT	KK	LL <sup>*1</sup>	WF	X <sup>*1</sup>
ø40	30	46	9	11	175 (181)	65	83	101	10	M14x1.5	161 (167)	21	216 (222)
ø50	35	52	9	11	199 (207)	77	100	120	12	M18x1.5	183 (191)	23	245 (253)
ø63	35	62	9	11	213 (221)	92	115	135	12	M18x1.5	197 (205)	23	259 (267)
ø80	40	63	12	16	265 (275)	100	126	153	16	M22x1.5	245 (255)	32	321 (331)
ø100	40	75	14	16	285 (295)	120	150	178	16	M26x1.5	265 (275)	32	341 (351)

Code	With Bellows												
Bore Size (mm)	ℓ												
	50 or less	Over 50 to 100 or Less	Over 100 to 150 or Less	Over 150 to 200 or Less	Over 200 to 300 or Less	Over 300 to 400 or Less	Over 400 to 500 or Less	Over 500 to 600 or Less	Over 600 up to 700	Over 700 up to 750	Over 750 up to 800	Over 800	
ø40	30	43	55	68	93	118	143	0.35×Stroke - 32					
ø50	31	44	56	69	94	119	144	0.35×Stroke - 41					
ø63	31	44	56	69	94	119	144	0.35×Stroke - 41					
ø80	29	42	54	67	92	117	142	167	192	204	217	0.35×Stroke - 63	
ø100	29	42	54	67	92	117	142	167	192	204	217	0.35×Stroke - 63	

\*1: Dimensions in ( ) indicate the case of rubber cushion type.  
 \*2: For dimensions with each switch, refer to P. 404.  
 \*3: For outline dimensions of models with valve (JSG-V), please refer to P. 398.

●Head Side Flange Type (FB)



Code	Head Side Flange Type (FB) Mounting Dimensions												
Bore Size (mm)	A	FA <sup>*1</sup>	FC	FD	FH	FJ <sup>*1</sup>	FL	FM	FT	KK	LL <sup>*1</sup>	WF	
ø40	30	222 (228)	46	9	65	192 (198)	83	101	10	M14x1.5	161 (167)	21	
ø50	35	253 (261)	52	9	77	218 (226)	100	120	12	M18x1.5	183 (191)	23	
ø63	35	267 (275)	62	9	92	232 (240)	115	135	12	M18x1.5	197 (205)	23	
ø80	40	333 (343)	63	12	100	293 (303)	126	153	16	M22x1.5	245 (255)	32	
ø100	40	353 (363)	75	14	120	313 (323)	150	178	16	M26x1.5	265 (275)	32	

Code	With Bellows												
Bore Size (mm)	ℓ												
	50 or less	Over 50 to 100 or Less	Over 100 to 150 or Less	Over 150 to 200 or Less	Over 200 to 300 or Less	Over 300 to 400 or Less	Over 400 to 500 or Less	Over 500 to 600 or Less	Over 600 up to 700	Over 700 up to 750	Over 750 up to 800	Over 800	
ø40	30	43	55	68	93	118	143	0.35×Stroke - 32					
ø50	31	44	56	69	94	119	144	0.35×Stroke - 41					
ø63	31	44	56	69	94	119	144	0.35×Stroke - 41					
ø80	29	42	54	67	92	117	142	167	192	204	217	0.35×Stroke - 63	
ø100	29	42	54	67	92	117	142	167	192	204	217	0.35×Stroke - 63	

\*1: Dimensions in ( ) indicate the case of rubber cushion type.  
 \*2: For dimensions with each switch, refer to P. 404.  
 \*3: For outline dimensions of models with valve (JSG-V), please refer to P. 398.

With Brake / With Lock

ULK□

JSK2/  
JSM2

JSG

JSC3,  
JSC4

USSD

UFCD

USC

Cylinder  
Switch

Ending

With Brake / With Lock

ULK□

JSK2/  
JSM2

JSG

JSC3,  
JSC4

USSD

UFCD

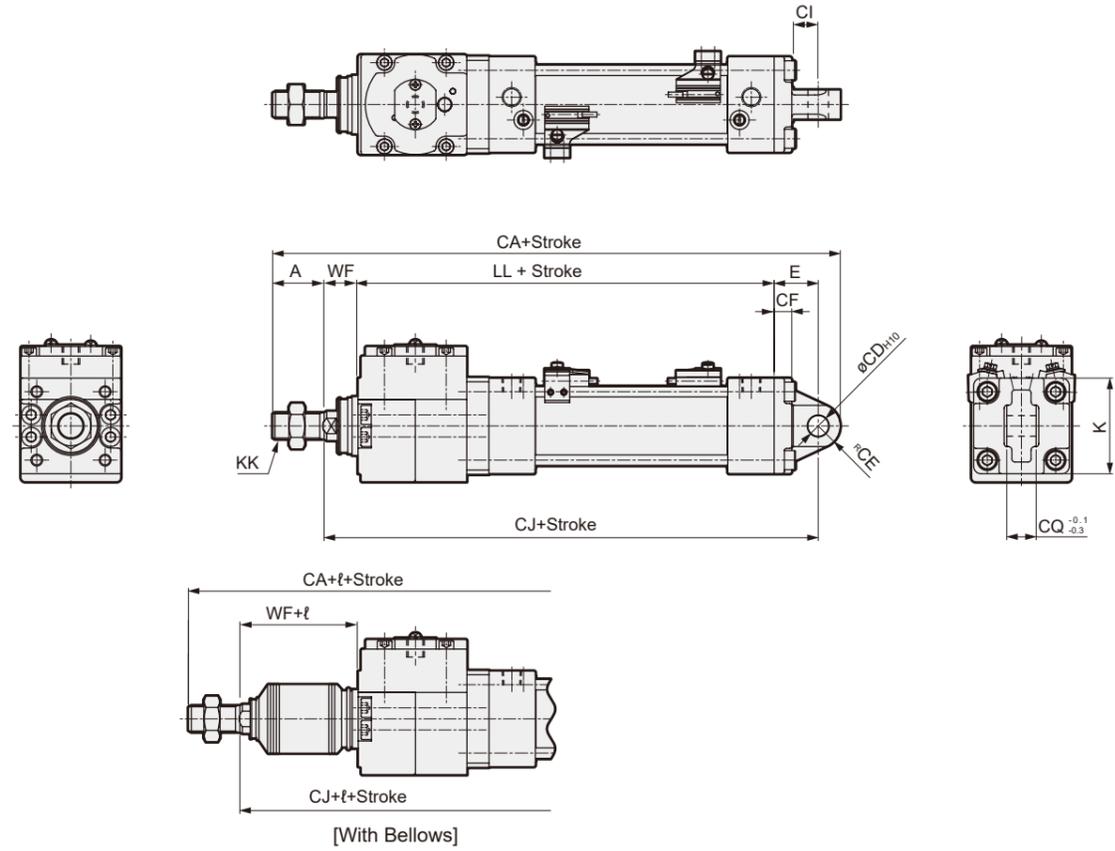
USC

Cylinder  
Switch

Ending

Dimensional Drawings

●Single Clevis Type (CA)



Code	Single Clevis Type (CA) Mounting Dimensions											
Bore Size (mm)	A	CA <sup>*1</sup>	CD	CE	CF	CI	CJ <sup>*1</sup>	CQ	E	KK	LL <sup>*1</sup>	WF
ø40	30	246 (252)	10	11	9	13	205 (211)	14	23	M14x1.5	161 (167)	21
ø50	35	286 (294)	14	15	12	17	236 (244)	20	30	M18x1.5	183 (191)	23
ø63	35	300 (308)	14	15	12	17	250 (258)	20	30	M18x1.5	197 (205)	23
ø80	40	382 (392)	22	23	15	26	319 (329)	30	42	M22x1.5	245 (255)	32
ø100	40	402 (412)	22	23	15	26	339 (349)	30	42	M26x1.5	265 (275)	32

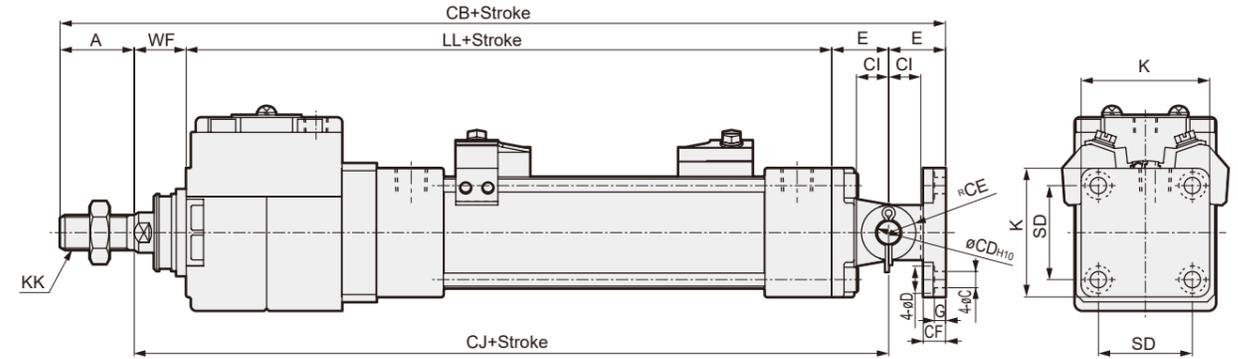
Code	With Bellows												
Bore Size (mm)	e												
	50 or less	Over 50 to 100 or Less	Over 100 to 150 or Less	Over 150 to 200 or Less	Over 200 to 300 or Less	Over 300 to 400 or Less	Over 400 to 500 or Less	Over 500 to 600 or Less	Over 600 up to 700	Over 700 up to 750	Over 750 up to 800	Over 800	
ø40	30	43	55	68	93	118	143	0.35×Stroke - 32					
ø50	31	44	56	69	94	119	144	169	0.35×Stroke - 41				
ø63	31	44	56	69	94	119	144	169	0.35×Stroke - 41				
ø80	29	42	54	67	92	117	142	167	192	204	217	0.35×Stroke - 63	
ø100	29	42	54	67	92	117	142	167	192	204	217	0.35×Stroke - 63	

\*1: Dimensions in ( ) indicate the case of rubber cushion type.  
 \*2: For dimensions with each switch, refer to P. 404.  
 \*3: For outline dimensions of models with valve (JSG-V), please refer to P. 398.

Dimensional Drawings

Dimensional Drawings

●Single Clevis Type (CA) with Bracket (Option Code B2)



Code	Single Clevis Type (CA) With Bracket (Option Code B2) Mounting Dimensions															
Bore Size (mm)	A	E	KK	LL	WF	C	CB	CD	CE	CF	CI	CJ	D	G	K	SD
ø40	30	23	M14x1.5	161 (167)	21	6.6	258 (264)	10	11	9	13	205 (211)	11	4.5	52	38
ø50	35	30	M18x1.5	183 (191)	23	9	301 (309)	14	15	12	17	236 (244)	14	6.5	65	46.5
ø63	35	30	M18x1.5	197 (205)	23	9	315 (323)	14	15	12	17	250 (258)	14	6.5	75	56.5
ø80	40	42	M22x1.5	245 (255)	32	11	401 (411)	22	23	15	26	319 (329)	17	8.5	95	72
ø100	40	42	M26x1.5	265 (275)	32	11	421 (431)	22	23	15	26	339 (349)	17	8.5	114	89

\*1: Dimensions in ( ) indicate the case of rubber cushion type.  
 \*2: For dimensions with each switch, refer to P. 404.  
 \*3: For outline dimensions of models with valve (JSG-V), please refer to P. 398.

With Brake / With Lock

ULK□

JSK2/  
JSM2

JSG

JSC3,  
JSC4

USSD

UFCD

USC

With Brake / With Lock

ULK□

JSK2/  
JSM2

JSG

JSC3,  
JSC4

USSD

UFCD

USC

Cylinder  
Switch

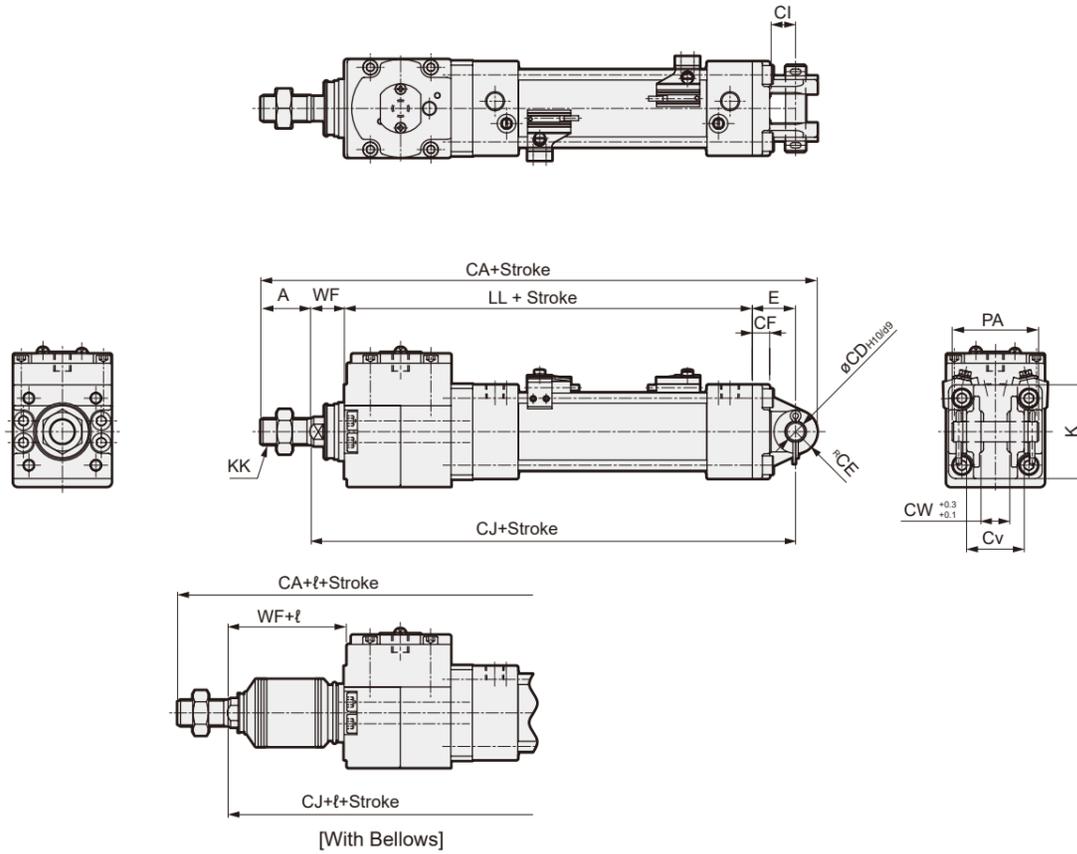
Ending

Cylinder  
Switch

Ending

Dimensional Drawings

● Double clevis type (CB)



Code	Double Clevis Type (CB) Mounting Dimensions														
Bore Size (mm)	A	CA <sup>*1</sup>	CD	CE	CF	CI	CJ <sup>*1</sup>	Cv	CW	E	K	KK	LL <sup>*1</sup>	PA	WF
ø40	30	246 (252)	10	11	9	13	205 (211)	28	14	23	52	M14x1.5	161 (167)	44	21
ø50	35	286 (294)	14	15	12	17	236 (244)	40	20	30	65	M18x1.5	183 (191)	60	23
ø63	35	300 (308)	14	15	12	17	250 (258)	40	20	30	75	M18x1.5	197 (205)	60	23
ø80	40	382 (392)	22	23	15	26	319 (329)	60	30	42	95	M22x1.5	245 (255)	82	32
ø100	40	402 (412)	22	23	15	26	339 (349)	60	30	42	114	M26x1.5	265 (275)	82	32

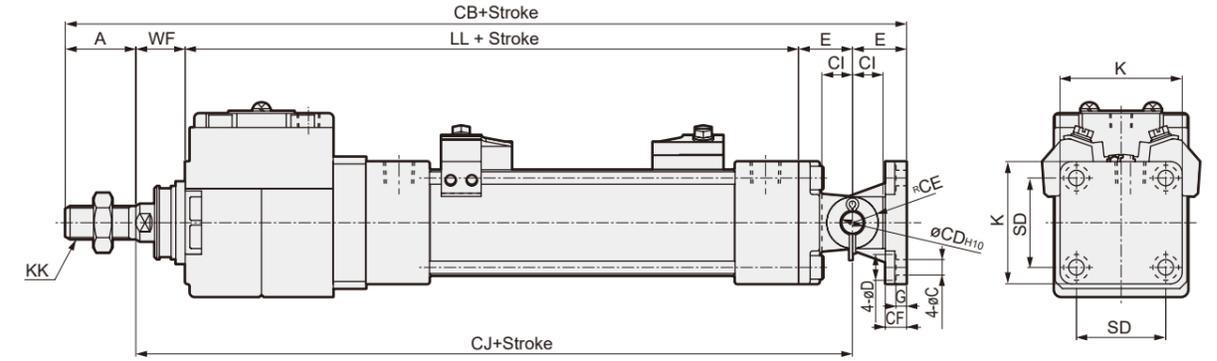
Code	With Bellows													
Bore Size (mm)	ℓ													
	50 or less	Over 50 to 100 or Less	Over 100 to 150 or Less	Over 150 to 200 or Less	Over 200 to 300 or Less	Over 300 to 400 or Less	Over 400 to 500 or Less	Over 500 to 600 or Less	Over 600 up to 700	Over 700 up to 750	Over 750 up to 800	Over 800		
ø40	30	43	55	68	93	118	143	0.35×Stroke - 32						
ø50	31	44	56	69	94	119	144	169	0.35×Stroke - 41					
ø63	31	44	56	69	94	119	144	169	0.35×Stroke - 41					
ø80	29	42	54	67	92	117	142	167	192	204	217	0.35×Stroke - 63		
ø100	29	42	54	67	92	117	142	167	192	204	217	0.35×Stroke - 63		

\*1: Dimensions in ( ) indicate the case of rubber cushion type.  
 \*2: For dimensions with each switch, refer to P. 404.  
 \*3: For outline dimensions of models with valve (JSG-V), please refer to P. 398.

Dimensional Drawings

Dimensional Drawings

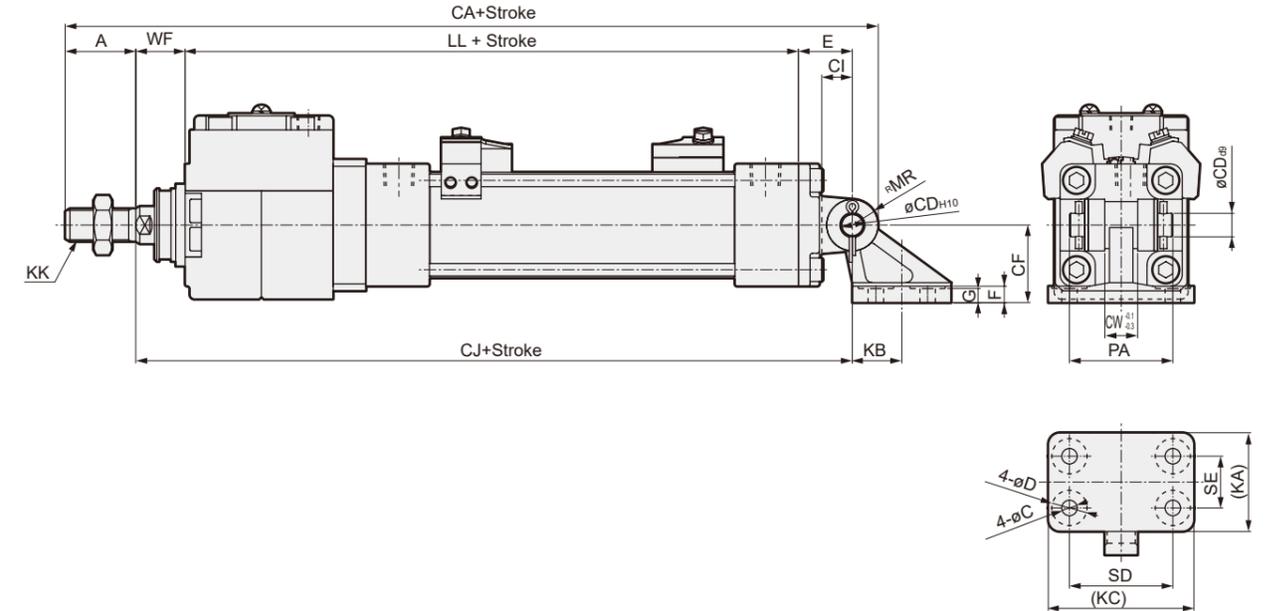
● Double clevis type (CB) with bracket (Option Code B1)



Code	Double Clevis Type (CB) With Bracket (Option Code B1) Mounting Dimensions															
Bore Size (mm)	A	E	KK	LL	WF	C	CB	CD	CE	CF	CI	CJ	D	G	K	SD
ø40	30	23	M14x1.5	161 (167)	21	6.6	258 (264)	10	11	9	13	205 (211)	11	4.5	52	38
ø50	35	30	M18x1.5	183 (191)	23	9	301 (309)	14	15	12	17	236 (244)	14	6.5	65	46.5
ø63	35	30	M18x1.5	197 (205)	23	9	315 (323)	14	15	12	17	250 (258)	14	6.5	75	56.5
ø80	40	42	M22x1.5	245 (255)	32	11	401 (411)	22	23	15	26	319 (329)	17	8.5	95	72
ø100	40	42	M26x1.5	265 (275)	32	11	421 (431)	22	23	15	26	339 (349)	17	8.5	114	89

\*1: Dimensions in ( ) indicate the case of rubber cushion type.  
 \*2: For dimensions with each switch, refer to P. 404.  
 \*3: For outline dimensions of models with valve (JSG-V), please refer to P. 398.

● Double clevis type (CB) with bracket (Option Code B3)

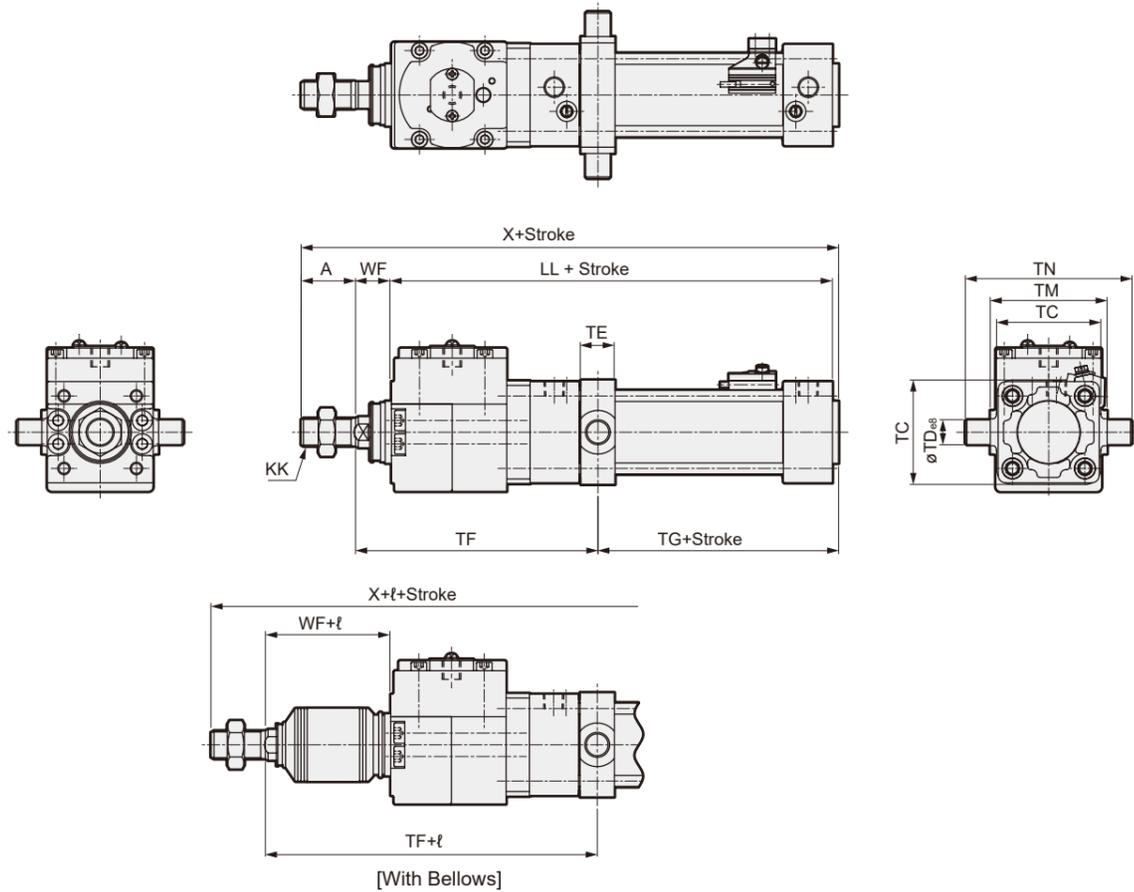


Code	Double clevis type (CB) with bracket (Option Code B3) Mounting dimensions																			
Bore Size (mm)	A	CI	E	KK	LL	WF	C	CA	CD	MR	CF	CJ	D	F	G	KA	KB	KC	SD	SE
ø40	30	13	23	M14x1.5	161 (167)	21	6.6	246 (252)	10	11	33	205 (211)	15	7	6	42	21	62	44	22
ø50	35	17	30	M18x1.5	183 (191)	23	9	286 (294)	14	15	45	236 (244)	18	8	7	53	28	81	60	30
ø63	35	17	30	M18x1.5	197 (205)	23	9	300 (308)	14	15	45	250 (258)	18	8	7	53	28	81	60	30
ø80	40	26	42	M22x1.5	245 (255)	32	11	382 (392)	22	23	65	319 (329)	22	10	9	73	41.5	111	86	45
ø100	40	26	42	M26x1.5	265 (275)	32	11	402 (412)	22	23	65	339 (349)	22	10	9	73	41.5	111	86	45

\*1: Dimensions in ( ) indicate the case of rubber cushion type.  
 \*2: For dimensions with each switch, refer to P. 404.  
 \*3: For outline dimensions of models with valve (JSG-V), please refer to P. 398.

Dimensional Drawings

●Rod side trunnion type (TA)



Code		Rod Side Trunnion Type (TA) Mounting Dimensions										
Bore Size (mm)	A	KK	LL <sup>*1</sup>	WF	TC	TD	TE	TF	TG <sup>*1</sup>	TM	TN	X <sup>*1</sup>
ø50	35	M18x1.5	183 (191)	23	67	16	22	155.5	54.5 (62.5)	75	107	245 (253)
ø63	35	M18x1.5	197 (205)	23	82	20	28	172.5	51.5 (59.5)	90	130	259 (267)
ø80	40	M22x1.5	245 (255)	32	100	20	34	219	62 (72)	110	150	321 (331)
ø100	40	M26x1.5	265 (275)	32	121	25	40	242	59 (69)	132	182	341 (351)

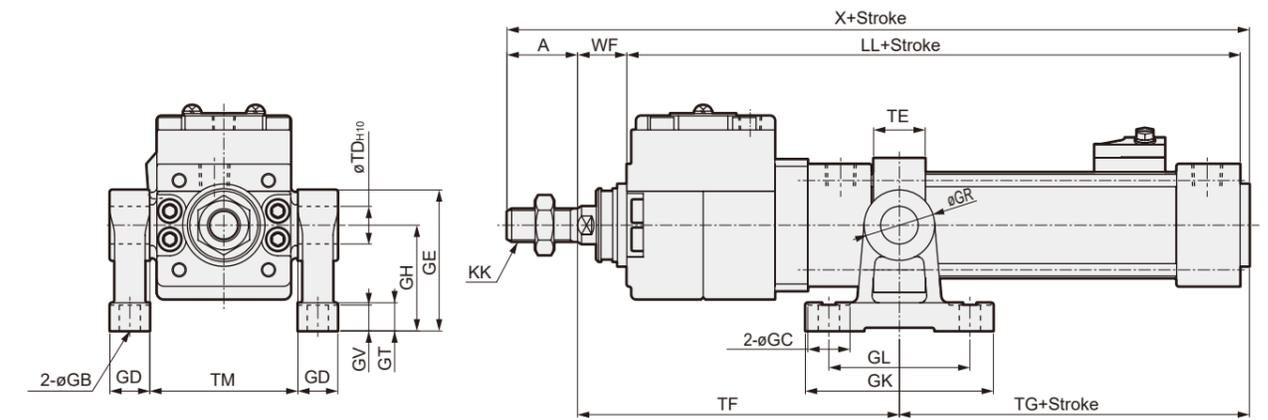
Code		With Bellows											
Bore Size (mm)	e												
		50 or less	Over 50 to 100 or Less	Over 100 to 150 or Less	Over 150 to 200 or Less	Over 200 to 300 or Less	Over 300 to 400 or Less	Over 400 to 500 or Less	Over 500 to 600 or Less	Over 600 up to 700	Over 700 up to 750	Over 750 up to 800	Over 800
ø40	30	43	55	68	93	118	143	0.35×Stroke - 32					
ø50	31	44	56	69	94	119	144	0.35×Stroke - 41					
ø63	31	44	56	69	94	119	144	0.35×Stroke - 41					
ø80	29	42	54	67	92	117	142	167	192	204	217	0.35×Stroke - 63	
ø100	29	42	54	67	92	117	142	167	192	204	217	0.35×Stroke - 63	

\*1: Dimensions in ( ) indicate the case of rubber cushion type.  
 \*2: For dimensions with each switch, refer to P. 404.  
 \*3: For outline dimensions of models with valve (JSG-V), please refer to P. 398.

Dimensional Drawings

Dimensional Drawings

●Rod side trunnion type (TA) with bracket (Option Code B4)

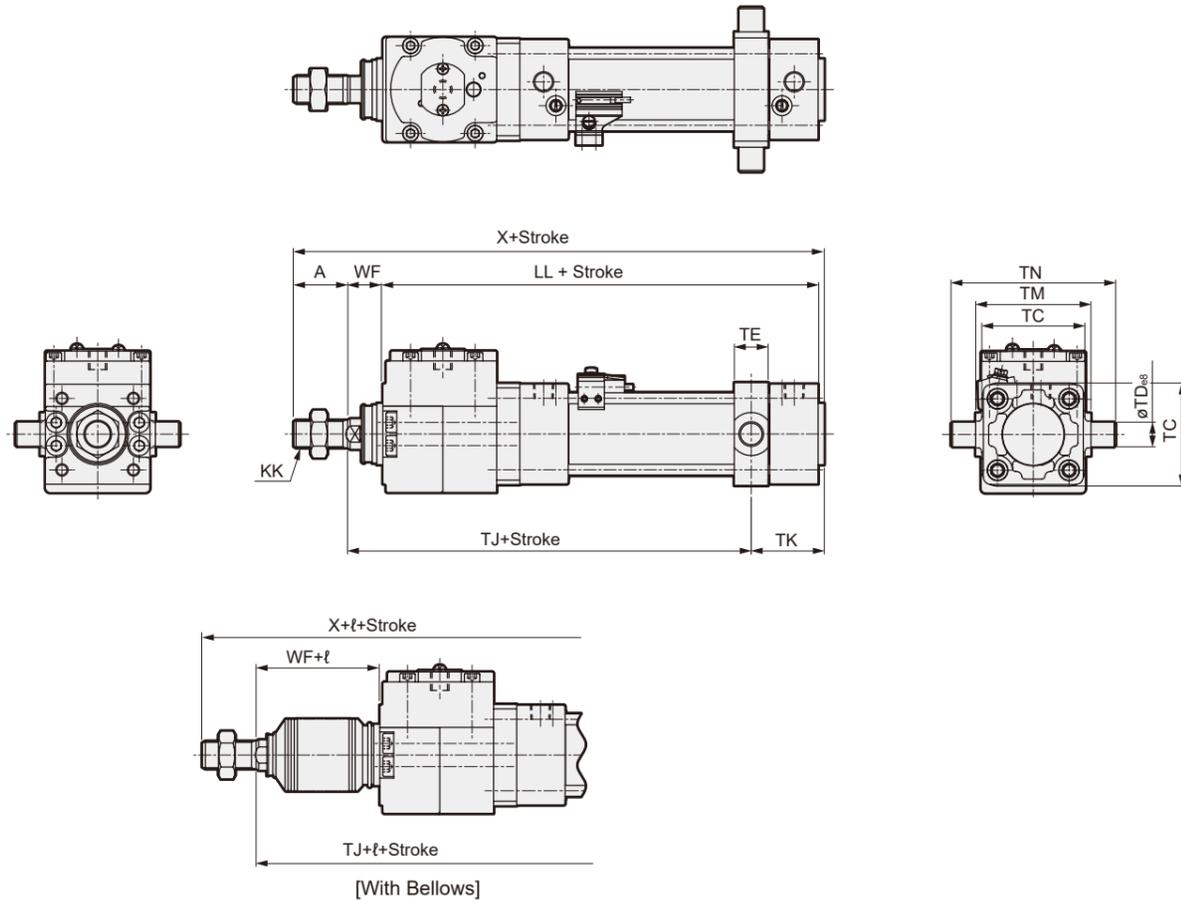


Code		Rod Side Trunnion Type (TA) with Bracket (Option Code B4) Mounting Dimensions																		
Bore Size (mm)	A	KK	LL	WF	X	TE	TF	TG	TM	GB	GC	GD	GE	GH	GK	GL	GR	GT	GV	TD
ø50	35	M18x1.5	101 (191)	37	245 (253)	22	155.5	54.5 (63)	75	9	18	17	60	45	80	60	30	12	11	16
ø63	35	M18x1.5	105 (205)	35	259 (267)	28	172.5	51.5 (60)	90	11	22	20	80	60	100	70	40	14	13	20
ø80	40	M22x1.5	116 (255)	48	321 (331)	34	219	62 (72)	110	11	22	20	80	60	100	70	40	14	13	20
ø100	40	M26x1.5	128 (275)	53	341 (351)	40	242	59 (69)	132	13.5	24	26	100	75	120	90	50	17	16	25

\*1: Dimensions in ( ) indicate the case of rubber cushion type.  
 \*2: For dimensions with each switch, refer to P. 404.  
 \*3: For outline dimensions of models with valve (JSG-V), please refer to P. 398.

Dimensional Drawings

●Head Side Trunnion (TB)



Code	Head Side Trunnion Type (TB) Mounting Dimensions												
Bore Size (mm)	A	EF	KK	LL <sup>*1</sup>	TC	TD	TE	TJ <sup>*1</sup>	TK	TM	TN	WF	X <sup>*1</sup>
	ø40	30	Rc1/8	M14x1.5	161 (167)	57	16	22	143 (149)	43	63	95	21
ø50	35	Rc1/8	M18x1.5	183 (191)	67	16	22	162.5 (170.5)	47.5	75	107	23	245 (253)
ø63	35	Rc1/4	M18x1.5	197 (205)	82	20	28	173.5 (181.5)	50.5	90	130	23	259 (267)
ø80	40	Rc1/4	M22x1.5	245 (255)	100	20	34	221 (231)	60	110	150	32	321 (331)
ø100	40	Rc3/8	M26x1.5	265 (275)	121	25	40	238 (248)	63	132	182	32	341 (351)

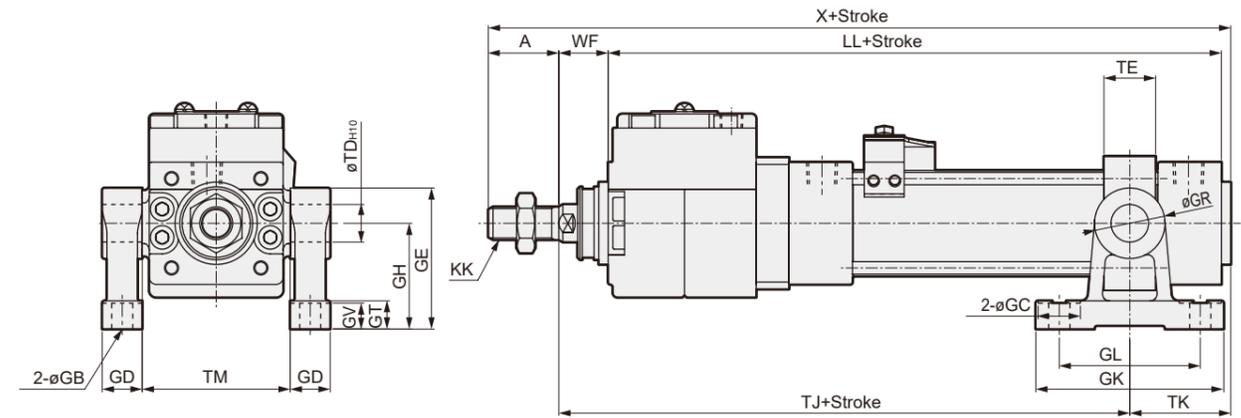
Code	With Bellows												
Bore Size (mm)	ℓ												
	50 or less	Over 50 to 100 or Less	Over 100 to 150 or Less	Over 150 to 200 or Less	Over 200 to 300 or Less	Over 300 to 400 or Less	Over 400 to 500 or Less	Over 500 to 600 or Less	Over 600 up to 700	Over 700 up to 750	Over 750 up to 800	Over 800	
ø40	30	43	55	68	93	118	143	0.35×Stroke - 32					
ø50	31	44	56	69	94	119	144	169	0.35×Stroke - 41				
ø63	31	44	56	69	94	119	144	169	0.35×Stroke - 41				
ø80	29	42	54	67	92	117	142	167	192	204	217	0.35×Stroke - 63	
ø100	29	42	54	67	92	117	142	167	192	204	217	0.35×Stroke - 63	

\*1: Dimensions in ( ) indicate the case of rubber cushion type.  
 \*2: For dimensions with each switch, refer to P. 404.  
 \*3: For outline dimensions of models with valve (JSG-V), please refer to P. 398.

Dimensional Drawings

Dimensional Drawings

●Head side trunnion type (TB) with bracket (Option Code B4)



Code	Head Side Trunnion Type (TB) with Bracket (Option Code B4) Mounting Dimensions																			
Bore Size (mm)	A	KK	LL	WF	X	TE	TJ	TK	TM	GB	GC	GD	GE	GH	GK	GL	GR	GT	GV	TD
	ø40	30	M14x1.5	93 (167)	33.5	216 (222)	22	143 (149)	43	63	9	18	17	60	45	80	60	30	12	11
ø50	35	M18x1.5	101 (191)	37	245 (253)	22	162.5 (170.5)	47.5	75	9	18	17	60	45	80	60	30	12	11	16
ø63	35	M18x1.5	105 (205)	35	259 (267)	28	173.5 (181.5)	50.5	90	11	22	20	80	60	100	70	40	14	13	20
ø80	40	M22x1.5	116 (255)	48	321 (331)	34	221 (231)	60	110	11	22	20	80	60	100	70	40	14	13	20
ø100	40	M26x1.5	128 (275)	53	341 (351)	40	238 (248)	63	132	13.5	24	26	100	75	120	90	50	17	16	25

\*1: Dimensions in ( ) indicate the case of rubber cushion type.  
 \*2: For dimensions with each switch, refer to P. 404.  
 \*3: For outline dimensions of models with valve (JSG-V), please refer to P. 398.

With Brake / With Lock

ULK□

JSK2/  
JSM2

JSG

JSC3,  
JSC4

USSD

UFCD

USC

With Brake / With Lock

ULK□

JSK2/  
JSM2

JSG

JSC3,  
JSC4

USSD

UFCD

USC

Cylinder  
Switch

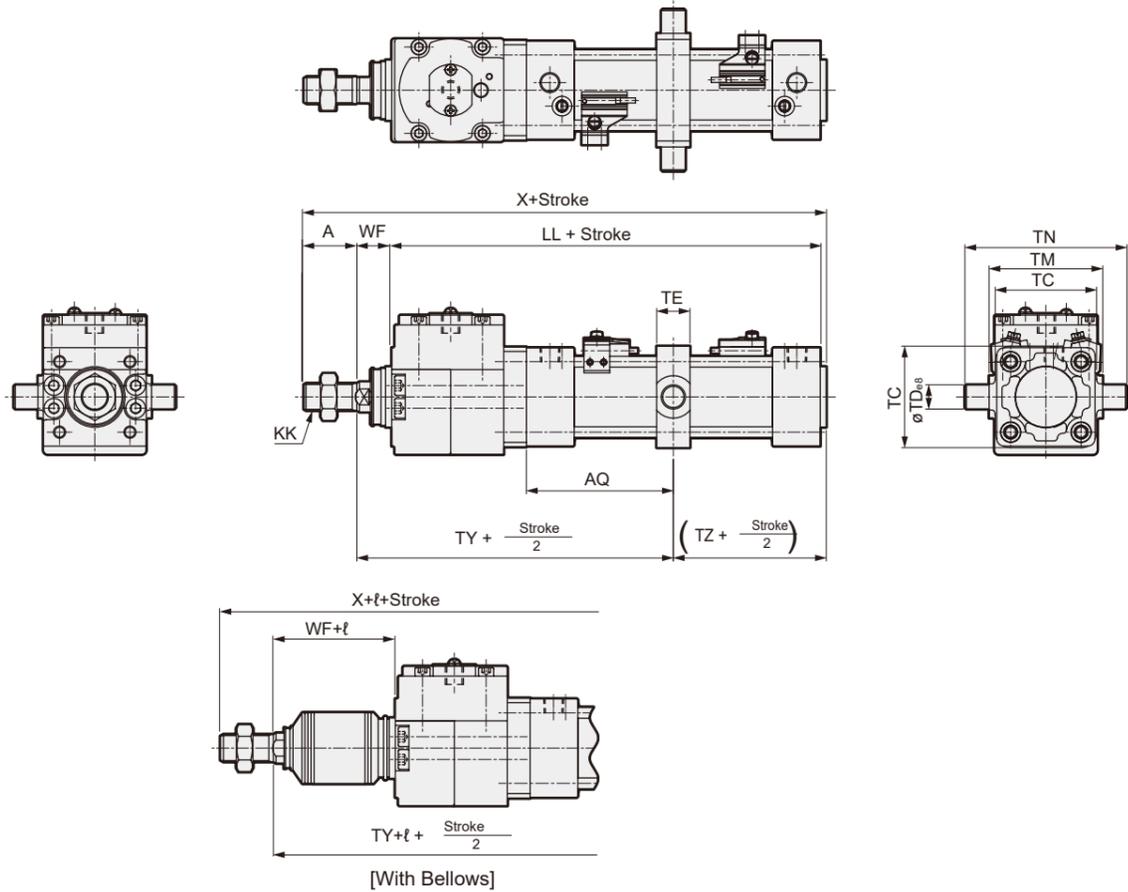
Ending

Cylinder  
Switch

Ending

Dimensional Drawings

●Intermediate trunnion type (TC)



Code		Intermediate Trunnion Type (TC) Mounting Dimensions												
Bore Size (mm)	A	KK	LL <sup>*1</sup>	TC	TD	TE	TM	TN	TY <sup>*1</sup>	TZ <sup>*1</sup>	AQ <sup>*1</sup>	WF	X <sup>*1</sup>	
														ø40
ø50	35	M18x1.5	183 (191)	67	16	22	75	107	159 (163)	51 (55)	47 (51)+ $\frac{\text{Stroke}}{2}$	23	245 (253)	
ø63	35	M18x1.5	197 (205)	82	20	28	90	130	173 (177)	51 (55)	47 (51)+ $\frac{\text{Stroke}}{2}$	23	259 (267)	
ø80	40	M22x1.5	245 (255)	100	20	34	110	150	220 (225)	61 (66)	57 (62)+ $\frac{\text{Stroke}}{2}$	32	321 (331)	
ø100	40	M26x1.5	265 (275)	121	25	40	132	182	240 (245)	61 (66)	57 (62)+ $\frac{\text{Stroke}}{2}$	32	341 (351)	

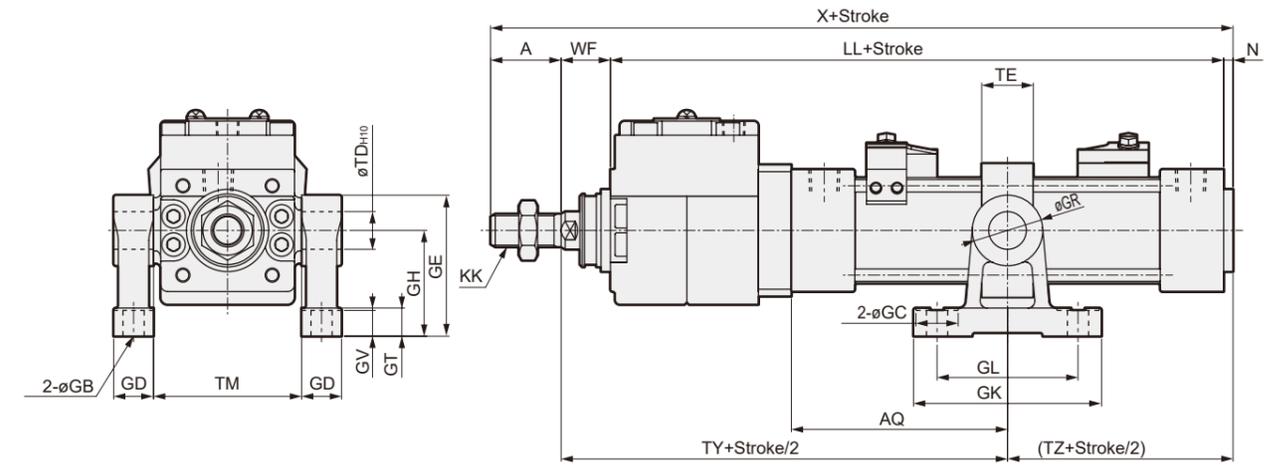
Code		With Bellows												
Bore Size (mm)	ℓ													
		50 or less	Over 50 to 100 or Less	Over 100 to 150 or Less	Over 150 to 200 or Less	Over 200 to 300 or Less	Over 300 to 400 or Less	Over 400 to 500 or Less	Over 500 to 600 or Less	Over 600 up to 700	Over 700 up to 750	Over 750 up to 800	Over 800	
ø40	30	43	55	68	93	118	143	0.35×Stroke - 32						
ø50	31	44	56	69	94	119	144	169	0.35×Stroke - 41					
ø63	31	44	56	69	94	119	144	169	0.35×Stroke - 41					
ø80	29	42	54	67	92	117	142	167	192	204	217	0.35×Stroke - 63		
ø100	29	42	54	67	92	117	142	167	192	204	217	0.35×Stroke - 63		

\*1: Dimensions in ( ) indicate the case of rubber cushion type.  
 \*2: For dimensions with each switch, refer to P. 404.  
 \*3: For outline dimensions of models with valve (JSG-V), please refer to P. 398.

Dimensional Drawings

Dimensional Drawings

●Intermediate trunnion type (TC) with bracket (Option Code B4)

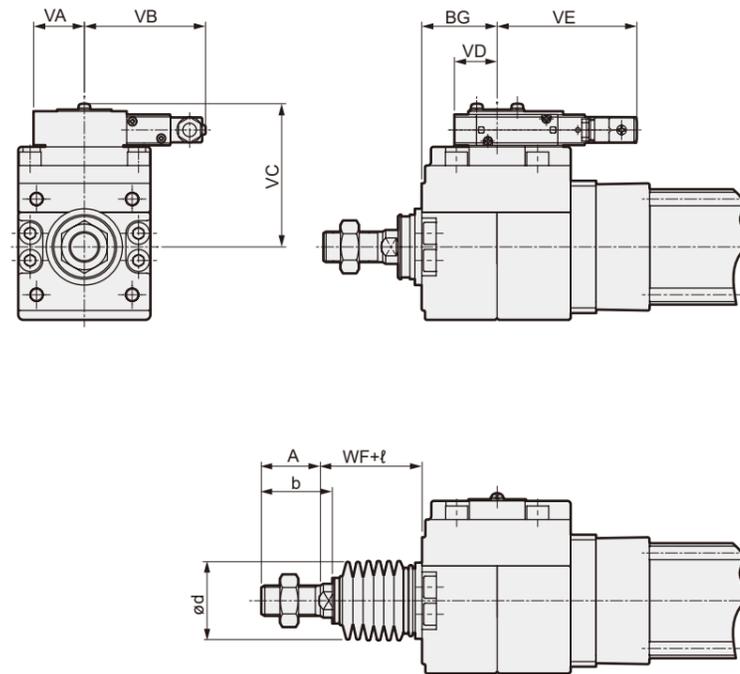
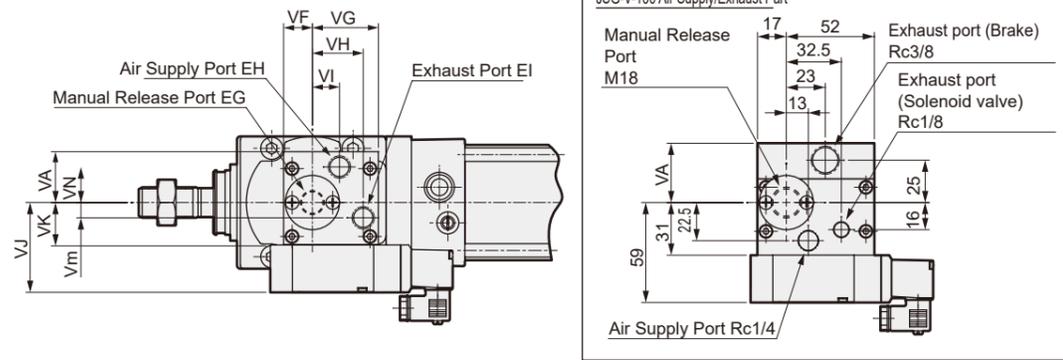


Code		Intermediate Trunnion Type (TC) with Bracket (Option Code B4) Mounting Dimensions																			
Bore Size (mm)	A	KK	LL	WF	X	AQ	TE	TY	TZ	TM	GB	GC	GD	GE	GH	GK	GL	GR	GT	GV	TD
ø50	35	M18x1.5	101 (191)	37	245 (253)	47 (51)+ $\frac{\text{Stroke}}{2}$	22	159 (163)	51 (55)	75	9	18	17	60	45	80	60	30	12	11	16
ø63	35	M18x1.5	105 (205)	35	259 (267)	47 (51)+ $\frac{\text{Stroke}}{2}$	28	173 (177)	51 (55)	90	11	22	20	80	60	100	70	40	14	13	20
ø80	40	M22x1.5	116 (255)	48	321 (331)	57 (62)+ $\frac{\text{Stroke}}{2}$	34	220 (225)	61 (66)	110	11	22	20	80	60	100	70	40	14	13	20
ø100	40	M26x1.5	128 (275)	53	341 (351)	57 (62)+ $\frac{\text{Stroke}}{2}$	40	240 (245)	61 (66)	132	13.5	24	26	100	75	120	90	50	17	16	25

\*1: Dimensions in ( ) indicate the case of rubber cushion type.  
 \*2: For dimensions with each switch, refer to P. 404.  
 \*3: For outline dimensions of models with valve (JSG-V), please refer to P. 398.

## Dimensional Drawings

● JSG-V (with valve for brake release)



Code	With Brake Release Valve (JSG-V) Mounting Dimensions																
Bore Size (mm)	BG	EG	EH	EI	VA	VB	VC	VD	VE	VF	VG	VH	VI	VJ	VK	Vm	VN
ø40	32.5	M12	Rc1/8	Rc1/8	26	62.5	72	24	83.5	19	38	30	12.5	44	16	4	16
ø50	39	M12	Rc1/8	Rc1/8	26	62.5	79.5	24	83.5	19	38	30	12.5	44	16	4	16
ø63	44.5	M14	Rc1/4	Rc1/4	30	71.5	84.5	25	82.5	17	39	30	16	53	25	9	21
ø80	54.5	M16	Rc1/4	Rc1/4	30	71.5	98	25	82.5	17	39	30	16	53	25	9	21
ø100	65.5	M18	*1		35	77.5	113	21	86.5	*1							

Code	With Bellows													
Bore Size (mm)	A	b	d	WF	ℓ									
					50 or less	Over 50 to 100 or Less	Over 100 to 150 or Less	Over 150 to 200 or Less	Over 200 to 300 or Less	Over 300 to 400 or Less	Over 400 to 500 or Less	Over 500 to 600 or Less	Over 600 up to 700	Over 700 up to 750
ø40	30	35	40	21	30	43	55	68	93	118	143	-	-	-
ø50	35	42	47	23	31	44	56	69	94	119	144	169	-	-
ø63	35	42	47	23	31	44	56	69	94	119	144	169	-	-
ø80	40	50	53	32	29	42	54	67	92	117	142	167	192	204
ø100	40	52.5	61	32	29	42	54	67	92	117	142	167	192	204

\*1: The shape of the air supply/exhaust part for JSG-V-100 is different from other sizes. Please refer to the dimension drawing of the JSG-V-100 air supply/exhaust part in the upper right figure.

\*2: Dimensions other than the above are the same as the Double Acting, single rod type. Please refer to P. 384 to 397.

MEMO

With Brake / With Lock

ULK□

JSK2/  
JSM2

JSG

JSC3,  
JSC4

USSD

UFCD

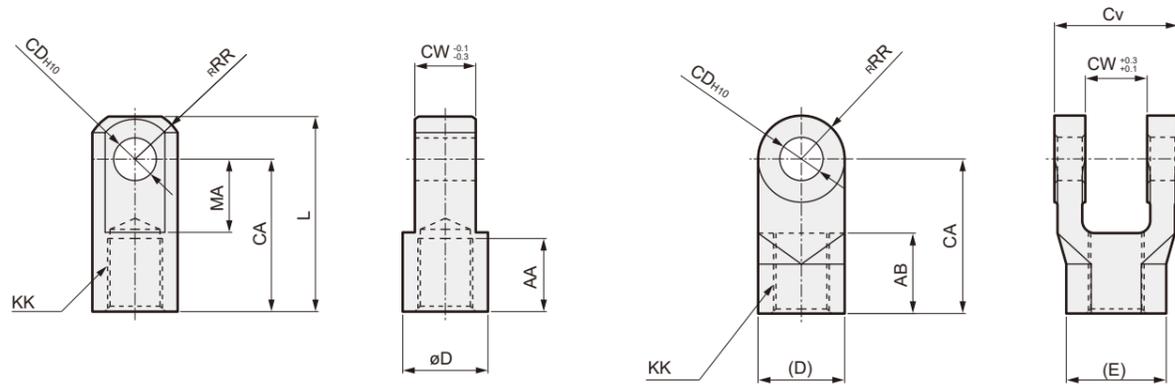
USC

Cylinder  
Switch

Ending

## JSG Series Common Accessories (Knuckle/Bracket) Outline Dimension Drawing

● Rod eye (I) Material: Steel, Paint treatment ● Rod clevis (Y) Material: Cast Iron, Painted



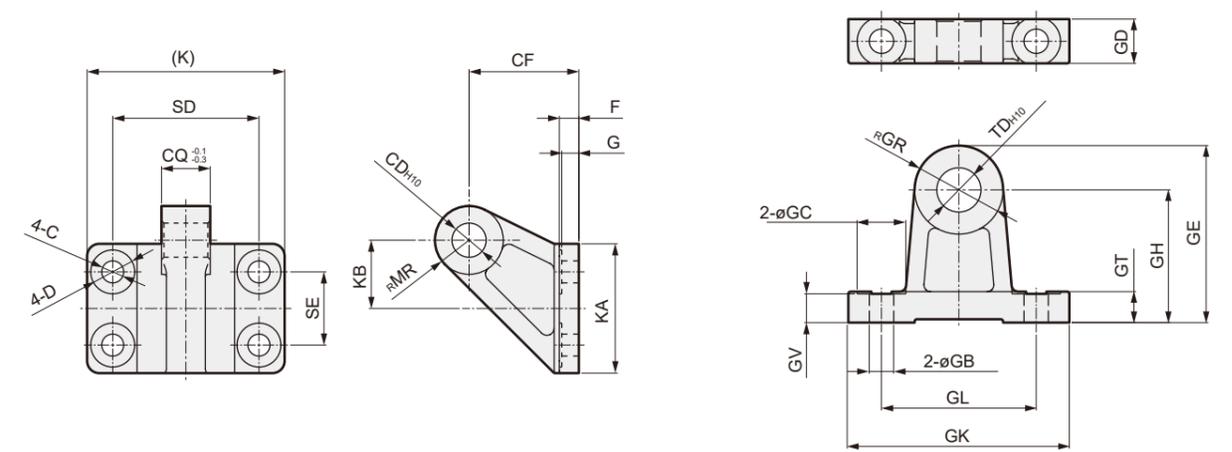
Model No.	Applicable tube inner diameter (mm)	AA	CA	CD	CW	D	KK	L	MA	RR	Weight (kg)
SCG-I-40	40	19	40	10	14	22	M14x1.5	50	19	12.5	0.07
SCG-I-50	50, 63	24	50	14	20	28	M18x1.5	64	24	16.5	0.20
SCG-I-80	80	26	60	22	30	40	M22x1.5	80	34	23.5	0.52
SCG-I-100	100	26	60	22	30	40	M26x1.5	80	34	23.5	0.48

Model No.	Applicable tube inner diameter (mm)	AB	CA	CD	Cv	CW	D	E	KK	RR	Weight (kg)
SCG-Y-40	40	21	40	10	28	14	22	22.4	M14x1.5	11	0.13
SCG-Y-50	50, 63	26	50	14	40	20	28	29.3	M18x1.5	14	0.30
SCG-Y-80	80	31	65	22	60	30	40	43.2	M22x1.5	20	0.94
SCG-Y-100	100	31	65	22	60	30	40	43.2	M26x1.5	20	0.92

Note: Pin, split pin, and plain washer are included.

## Accessory External Dimensions

● Single Bracket (B1) Material: Cast Iron, Painted ● Trunnion type 2nd bracket (B4) Material: Cast Iron, Painted

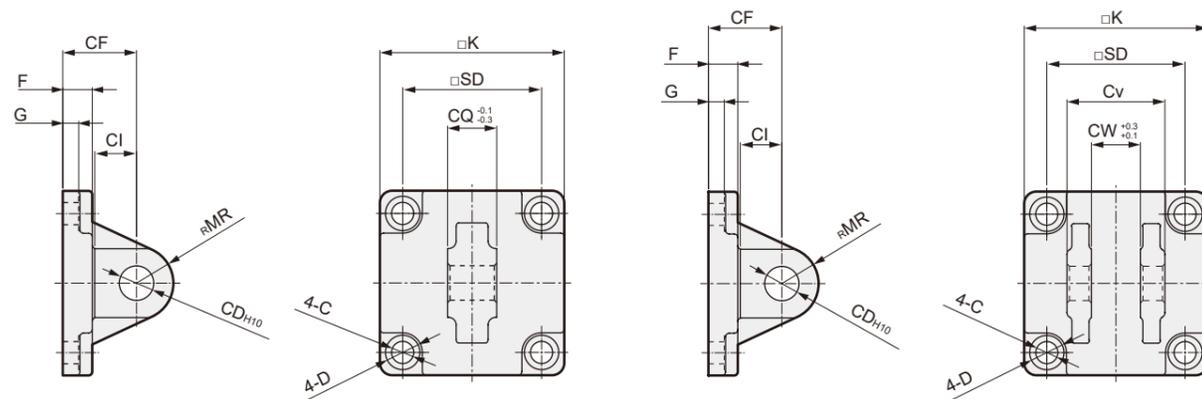


Model No.	Applicable tube inner diameter (mm)	C	CD	CF	CQ	D	F	G	K	KA	KB	MR	SD	SE	Weight (kg)
SCG-B3-32	40	6.6	10	33	14	15	7	6	62	42	21	10	44	22	0.21
SCG-B3-50	50, 63	9	14	45	20	18	8	7	81	53	28	14	60	30	0.45
SCG-B3-80	80, 100	11	22	65	30	22	10	9	111	73	41.5	22	86	45	1.23

Model No.	Applicable tube inner diameter (mm)	GB	GC	GD	GE	GR	GH	GK	GL	GT	GV	TD	Weight (kg)
SCG-B4-40	40, 50	9	18	17	60	30	45	80	60	12	11	16	0.43
SCG-B4-63	63, 80	11	22	20	80	40	60	100	70	14	13	20	0.87
SCG-B4-100	100	13.5	24	26	100	50	75	120	90	17	16	25	1.75

Note: Brackets come in sets of 2.

● Single Bracket (B1) Material: Cast Iron, Painted ● Clevis bracket (B2) Material: Cast Iron, Painted

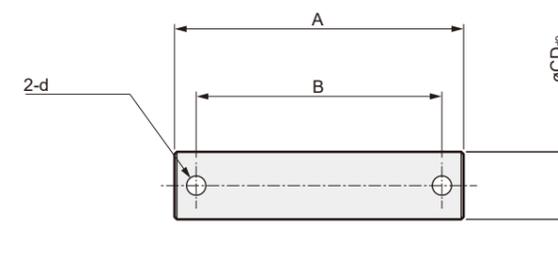


Model No.	Applicable tube inner diameter (mm)	C	CD	CF	CI	CQ	D	F	G	K	MR	SD	Weight (kg)
SCG-B1-40	40	6.6	10	23	13	14	11	9	4.5	52	11	38	0.16
SCG-B1-50	50	9	14	30	17	20	14	12	6.5	65	15	46.5	0.38
SCG-B1-63	63	9	14	30	17	20	14	12	6.5	75	15	56.5	0.48
SCG-B1-80	80	11	22	42	26	30	17	15	8.5	95	23	72	1.19
SCG-B1-100	100	11	22	42	26	30	17	15	8.5	114	23	89	1.56

Model No.	Applicable tube inner diameter (mm)	C	CD	CF	CI	Cv	CW	D	F	G	K	MR	SD	Weight (kg)
SCG-B2-40	40	6.6	10	23	13	28	14	11	9	4.5	52	11	38	0.20
SCG-B2-50	50	9	14	30	17	40	20	14	12	6.5	65	15	46.5	0.46
SCG-B2-63	63	9	14	30	17	40	20	14	12	6.5	75	15	56.5	0.58
SCG-B2-80	80	11	22	42	26	60	30	17	15	8.5	95	23	72	1.52
SCG-B2-100	100	11	22	42	26	60	30	17	15	8.5	114	23	89	1.91

Note: Pin, split pin, and plain washer are included.

● Pin (P) Material: Steel, Zinc Chromate treatment

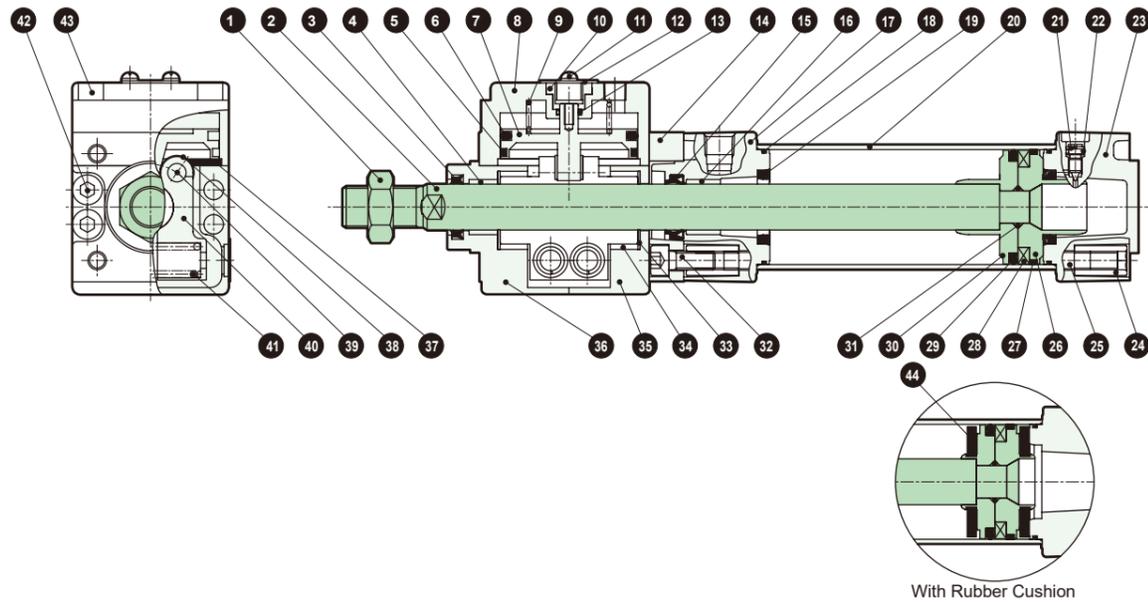


Model No.	Applicable tube inner diameter (mm)	A	B	CD	d	Weight (kg)
SCG-P-32	40	44	36	10	3	0.04
SCG-P-50	50, 63	60	51	14	4	0.10
SCG-P-80	80, 100	82	72	22	4	0.34

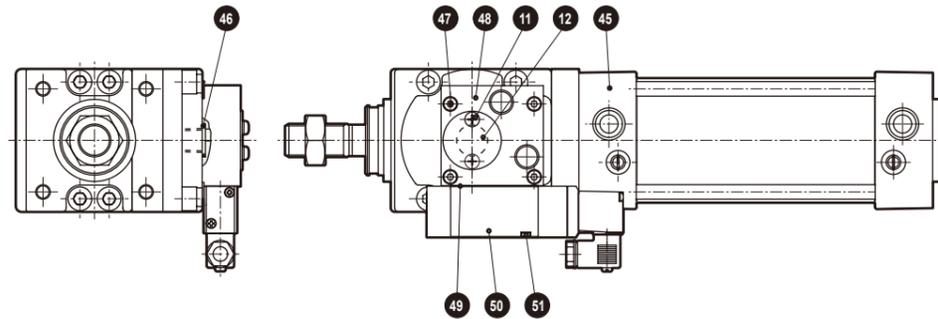
Note: Cotter pin and plain washer are attached.

Internal Structure and Materials

● JSG



● JSG-V



**Do Not Disassemble**

Material

No.	Part Name	Material	Remarks	Part No.	Part Name	Material	Remarks
1	Rod Nut	Steel	Nickel Plating	27	Wear Ring	Polyacetal	
2	Piston Rod	Steel	Industrial Hard Chrome Plating	28	Magnet	Resin	
3	Scraper	Nitrile Rubber		29	Piston Packing	Nitrile Rubber	
4	Bushing	Oil Impregnated Bearing Alloy		30	Piston R	Aluminum Alloy	
5	Wear Ring	Polyacetal		31	Piston Gasket	Nitrile Rubber	
6	Piston Packing B	Nitrile Rubber		32	Hexagon Socket Head Cap Screw	Alloy Steel	Black Oxide
7	Piston for Brake	Cast Iron	Phosphate	33	Thrust Washer	Stainless Steel	
8	Body H	Aluminum Alloy	Chromate	34	Bushing	Bearing Alloy	
9	Piston Spring	Piano Wire	Painted	35	Body R	Aluminum Alloy	Chromate
10	Piston Guide	Cast Iron	Phosphate Coating	36	Body F	Aluminum Alloy	Chromate
11	Pan Head Screw with cross recess and captive washer	Steel	Zinc Chromate	37	Cushion Rubber	Urethane Rubber	
12	Dust Cover	Aluminum Alloy	Alumite	38	Bearing		
13	Gasket	Nitrile Rubber		39	Pin	Alloy Steel	
14	Joint plate	Aluminum Alloy	Alumite	40	Brake Metal	Cast Iron	Nickel Plating
15	Rod Packing	Nitrile Rubber		41	Brake Spring	Piano Wire	
16	Bushing	Oil Impregnated Bearing Alloy		42	Hexagon Socket Head Cap Screw	Alloy Steel	Black Oxide
17	Rod Cover	Aluminum Alloy	Painted	43	Hexagon Socket Head Cap Screw	Alloy Steel	Black Oxide
18	Cylinder Gasket	Nitrile Rubber		44	Cushion Rubber	Urethane Rubber	
19	Cushion Packing	Nitrile Rubber, Steel	Zinc Chromate	With Valve			
20	Cylinder Tube	Aluminum Alloy	Hard Alumite	45	Rod Cover	Aluminum Alloy	Painting
21	Cushion Needle	Copper Alloy	Nickel Plating	46	O-Ring	Nitrile Rubber	
22	Needle Gasket	Nitrile Rubber		47	Hexagon Socket Head Cap Screw	Steel	Black Oxide
23	Head cover	Aluminum Alloy	Painted	48	Sub plate	Aluminum Alloy	
24	Round Nut	Steel	Zinc Chromate	49	Gasket	Nitrile Rubber	
25	Tie Rod	Steel	Zinc Chromate	50	Selex valve		4KB (CKD)
26	Piston H	Aluminum Alloy		51	Pan Head Screw	Steel	Zinc Chromate

Note: Contains a strong spring and is Never disassemble the brake.

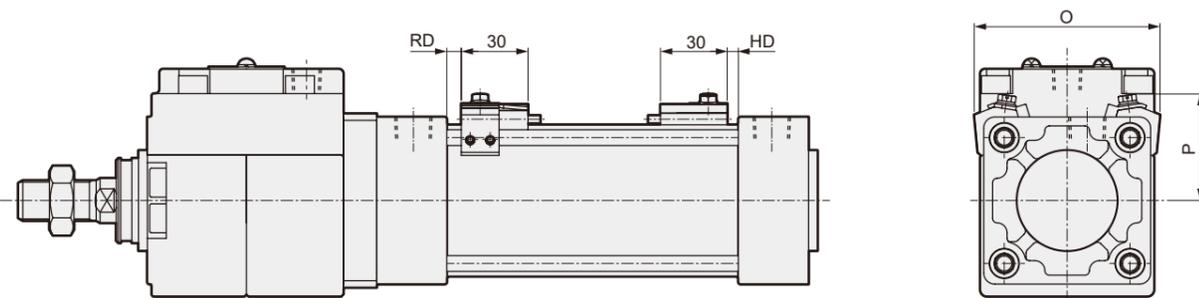
Mounting Bracket Material

Mounting Type	Material	Remarks
Foot (LB)	Steel	Nickel Plating
Flange (FA / FB)	Steel	Painted
Clevis (CA/CB)	Cast Iron	Painting
Trunnion (TA, TB, TC)	Cast Iron	Painted

For maintenance parts, please visit the CKD Equipment Product Site  
(<https://www.ckd.co.jp/kiki/en/>) → "model No." → Maintenance Parts.

## JSG Series Switch Equipped Outline Dimension Drawing

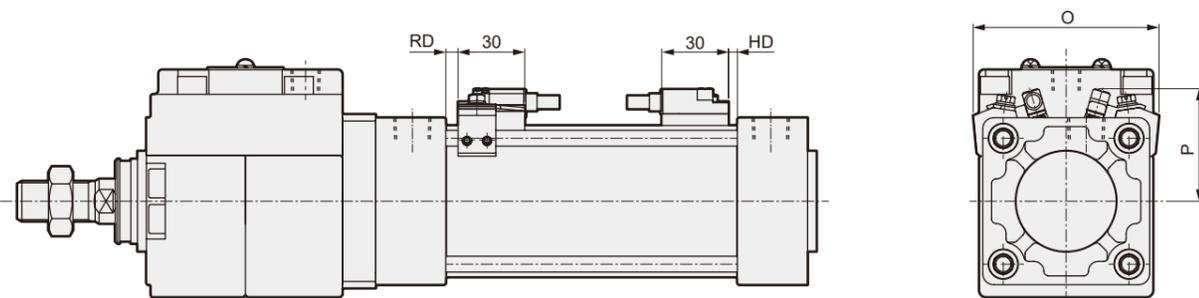
- T0H/V, T5H/V, T2H/V, T3H/V, T3PH/V, T2 [H/V] R3, T2WH/V, T3WH/V, T8H/V, T2JH/V
- JSG, JSG-V



Code	O	P	T0, T5, T2, T3, T3P, T2_R3		T2W, T3W		T8		T2J	
Bore Size (mm)			RD	HD	RD	HD	RD	HD	RD	HD
ø40	66	41	5 (8)	5 (8)	7.5 (10.5)	7.5 (10.5)	0 (2)	0 (2)	4 (7)	4 (7)
ø50	72	43	6.5 (10.5)	5 (9)	9 (13)	7 (11)	0.5 (4.5)	0 (3)	5.5 (9.5)	4 (8)
ø63	83	48	6.5 (10.5)	5 (9)	9 (13)	7 (11)	0.5 (4.5)	0 (3)	5.5 (9.5)	4 (8)
ø80	104	57	12.5 (17.5)	6 (11)	15 (20)	8 (13)	6.5 (11.5)	0 (5)	11.5 (16.5)	5 (10)
ø100	121	63	12 (17)	6.5 (11.5)	14.5 (19.5)	8.5 (13.5)	6 (11)	0.5 (5.5)	11 (16)	5.5 (10.5)

\*1: Dimensions in ( ) indicate the case of rubber cushion type.  
 \*2: For switch mountability, refer to the model number display method for each variation.

- T1H/V, T2YD, T2YDT
- JSG, JSG-V



Code	O	P	T1, T2YD, T2YDT	
Bore Size (mm)			RD	HD
ø40	66	41	4 (7)	4 (7)
ø50	72	44	5.5 (9.5)	4 (8)
ø63	83	50	5.5 (9.5)	4 (8)
ø80	104	57	11.5 (16.5)	5 (10)
ø100	121	64	11 (16)	5.5 (10.5)

\*1: Dimensions in ( ) indicate the case of rubber cushion type.  
 \*2: For switch mountability, refer to the model number display method for each variation.

## Applications

It can be used for devices and equipment requiring the following functions.

- 1 When multipoint positioning is required (Transfer/Positioning)

It can stop accurately at multiple target positions.

- 2 When fall prevention is required

When the air pressure source and power supply are turned OFF (during power outage or accident), the brake is applied instantly and can be held, preventing equipment damage and ensuring safety.

- 3 When emergency stop is required

If a worker, etc., enters a hazardous area, the cylinder stops instantaneously due to an electrical signal.

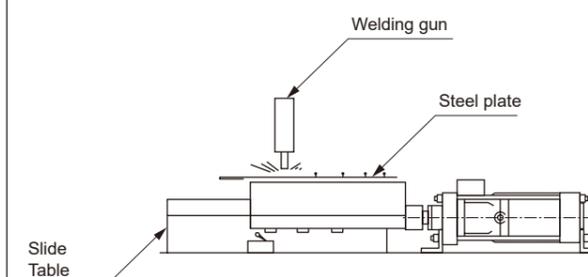
- 4 Work lock

When locking a workpiece to a jig, mounting base, etc., it can be locked even without a pneumatic source or power supply. Conveyance is possible while locked to the jig.

## Usage Example

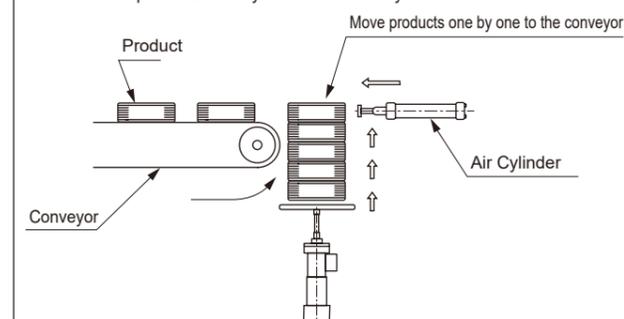
- 1 Linear multipoint welding

Movement and positioning of a slide table or welding gun when welding many steel plates, etc., in a straight line.



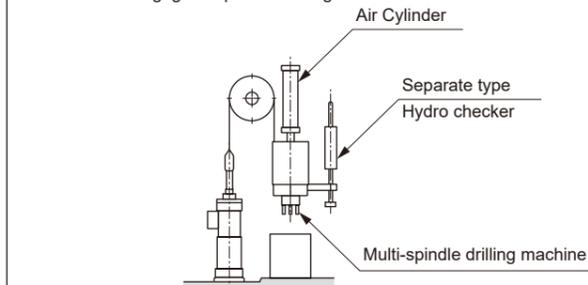
- 4 Move to conveyor

Move products one by one to the conveyor.



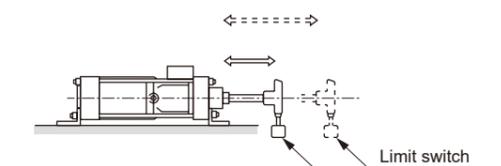
- 2 Fall prevention

If there is a load in the vertical direction and it is problematic for the load to fall under its own weight when the pressure source stops, the brake engages to prevent falling.



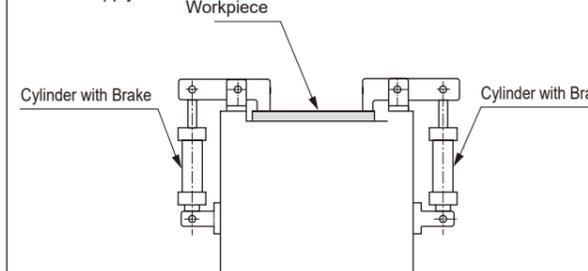
- 5 When it is necessary to have many cylinders with different strokes

When items of different sizes flow on a conveyor etc., the cylinders set there often need to change their strokes. In that case, by using a Brake Cylinder, cylinders with various strokes can be made electrically.



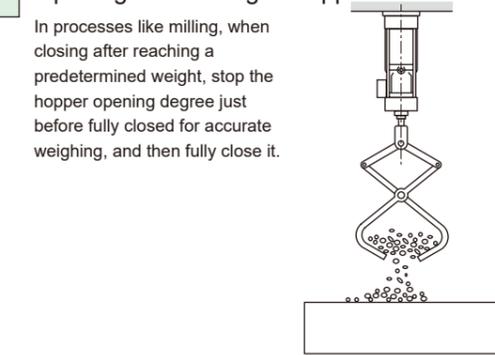
- 3 Work lock

When locking a workpiece to a jig, etc., if a cylinder with brake is used, it remains locked even if the pneumatic source and power supply are OFF.



- 6 Opening and closing of hopper

In processes like milling, when closing after reaching a predetermined weight, stop the hopper opening degree just before fully closed for accurate weighing, and then fully close it.



## ■ Mounting Bracket Rotated Assembly (-XK□)

Content: Specifies the mounting position of the mounting bracket.

Model No. Notation



Model Number

See the JSG model number display method.

⑫ Mounting bracket mounting position

### ⑫ Mounting bracket mounting position

Code	Content
XK1	Rotate mounting bracket 90° clockwise
XK3	Rotate mounting bracket 270° clockwise

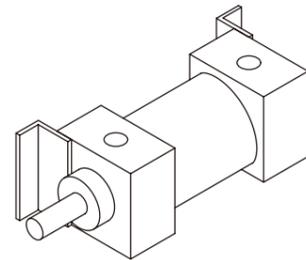
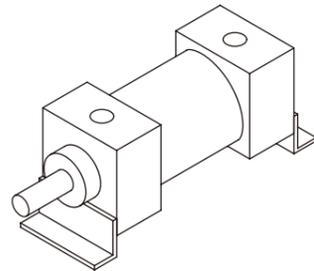
Note: For flanges and trunnions, only XK1 (90° rotation) is applicable.

### External view

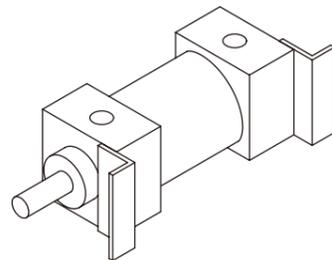
\*Port and cushion needle positions do not change.

● Basic

● K1



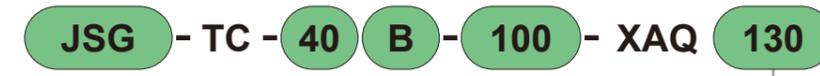
● K3



## ■ Trunnion Position Specification (-XAQ□□)

Content: Specify the dimension from the rod cover end face to the center of the trunnion axis.

Model No. Notation



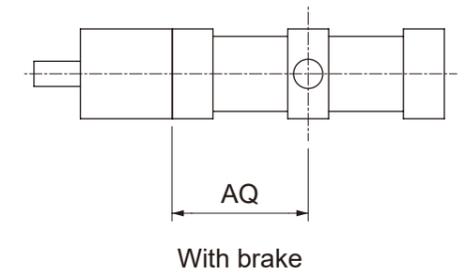
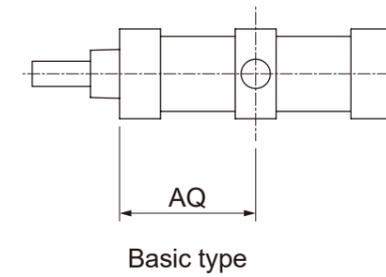
Model Number

See the JSG model number display method.

\* Describe the AQ dimension length.  
Example) AQ dimension = 130 mm

Note: The rod cover is also the standard for cylinders with brakes. (Please note that it is not the brake end face.)

### Dimensions



## ■ Knuckle Fixed by Pinning (-XP7)

Content: Also, drive a spring pin into the knuckle to prevent loosening.

Model No. Notation

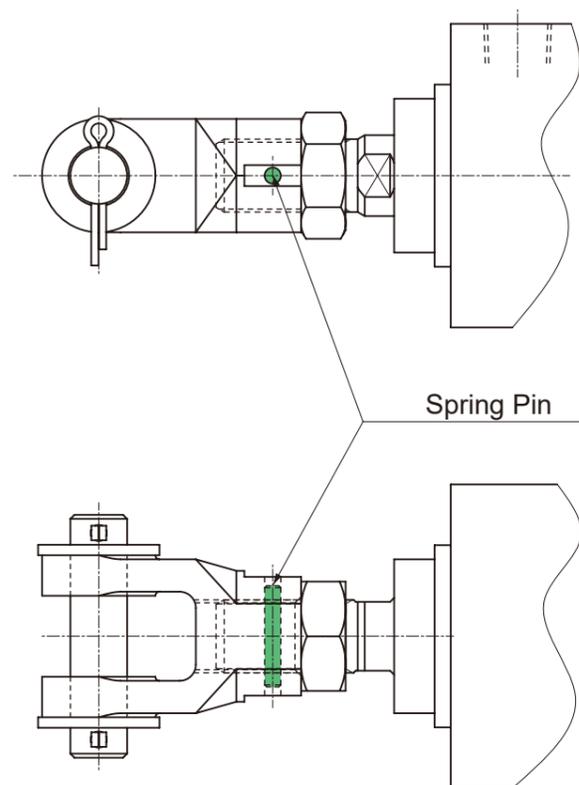
**JSG - TC - 40 B - 100 - Y - XP7**

Model Number

See the JSG model number display method.

## Dimensions

Same as with Knuckle specification. (Spring pin driving direction varies depending on the model.)



## ■ Without Bellows (-XJ9)

Content: Piston Rod with dimensions for bellows, but bellows not assembled

Model No. Notation

**JSG - 00 - 40 B - 100 - XJ9**

Model Number

See the JSG model number display method.

## Dimensional Drawings

Same dimensions as with bellows, but bellows are not included.

## ■ With 2 Rod Nuts

Content: Shipped with 2 rod nuts, same as standard.

Model No. Notation

**JSG - 00 - 40 B - 100 - A2**

Model Number

See the JSG model number display method.

## Dimensions

Same as standard type except that 2 rod nuts are included.



# To Use This Product Safely

Be sure to read this before use. For general cylinder information, see Intro 41, and for cylinder switches, see P. 1512.

## Specific Precautions: Brake Equipped Tie-rod Type JSG Series

### Design / Selection

#### Warning

■ Ensure the structure prevents direct human contact with the driven object and the moving parts of the cylinder with brake.

Install a protective cover so that the human body cannot touch it directly. Or, if there is a risk of touching, provide a sensor etc. to make a safe structure such as emergency stop before touching or sounding a warning sound to notify danger.

■ Use a balance circuit that considers Piston Rod projection.

If the brake is operated at any position during the stroke such as intermediate stop, and air pressure is applied to only one side of the cylinder, the Piston Rod will pop out at high speed when the brake is released. In such cases, there is a risk of personal injury, such as getting hands or feet caught, and damage to machinery. Therefore, use a balance circuit like the basic circuit to prevent projection.

■ Please note that holding force is the ability to hold a static load without vibration or impact after the brake is activated in an unloaded state.

Therefore, please be careful when using near the upper limit of the holding force at all times.

■ When the brake is activated, do not apply loads with impact, strong vibrations, or rotational forces.

If impact load, strong vibration, or rotational force is applied from the outside, the holding force will decrease and it is dangerous, so please be careful.

■ When performing an intermediate stop, consider the stopping accuracy and overrun amount.

Because it is a mechanical lock, it does not stop instantly in response to the stop signal, but stops with a time delay. The stroke sliding due to this delay is the overrun amount. And the range between the maximum and minimum overrun amount is the stopping accuracy.

- Position the limit switch in front of the desired stop position by the overrun amount.
- The limit switch requires a detection length (dog length) of overrun amount+α.
- The operating range of CKD cylinder switches is 7 to 16 mm, depending on the switch model. . If the overrun amount exceeds this, perform self-holding of the contact on the switch load side.

■ Do not use multiple cylinders with brakes in synchronization. If a synchronization error occurs, load may concentrate on the cylinder where the brake engaged first, potentially causing reduced lifespan or damage.

■ To further improve stopping accuracy, shorten the time from the stop signal to when the brake activates and stops as much as possible.

For this purpose, use DC type control electric circuits and valves with good responsiveness, and place the pneumatic piping between the valve and cylinder as close as possible.

■ Please note that stopping accuracy is affected by changes in piston speed.

If the piston speed changes due to load fluctuations or disturbances during cylinder operation, the variation in the stop position will increase. Therefore, ensure that the piston speed is constant just before the stop position. Also, during operation in the cushion region and while in the acceleration zone from the start of operation, the speed change is large, so the variation in the stop position will be large. The stopping accuracy at piston speed 300 mm/s and no load is ±1.0 mm (reference value). It varies depending on the equipment used. For details, refer to the page on stopping accuracy and overrun.

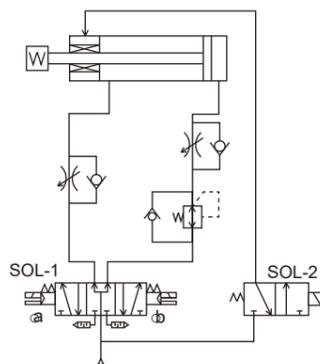
#### About Basic Circuits

Even when used for fall prevention or emergency stop, be sure to use the following circuit. 2-position valves cannot be used because the cylinder's own thrust acts on the brake part even when stopped. Balance the thrust and load with the following circuit. The brake may not release if a load is applied to the brake.

- In case of horizontal load

Piping as shown in Fig. 1 applies equal pressure to both sides of the piston when stopped, preventing rod projection when the brake is released. Also, install a pressure reducing valve with a check valve on the head side to balance the thrust.

Fig. 1

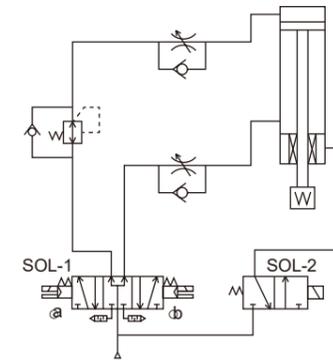


SOL-1	SOL-2	Operating State
OFF	OFF	Stop
ON	OFF	Retract
OFF	ON	Advance

- In case of downward vertical load

As shown in Fig. 2, if the load is downward, the rod will malfunction in the Load Direction when the brake is released. Therefore, install a pressure reducing valve with a check valve on the head side, reduce the thrust in the Load Direction, and balance the load.

Fig. 2

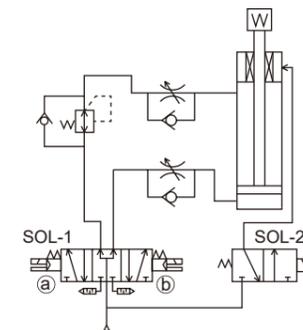


a SOL-1 b	SOL-2	Operating State
OFF	OFF	Stop
ON	OFF	Descend
OFF	ON	Ascend

- In case of upward vertical load

As shown in Fig. 3, if the load is upward, the rod will malfunction in the Load Direction when the brake is released. Therefore, install a pressure reducing valve with a check valve on the rod side, reduce the thrust in the Load Direction, and balance the load.

Fig. 3



a SOL-1 b	SOL-2	Operating State
OFF	OFF	Stop
ON	OFF	Descend
OFF	ON	Ascend

#### CAUTION

■ Install a speed controller on the cylinder.  
Install a speed controller on the cylinder. Please use within the operating piston speed range of each series.

#### About Stopping Accuracy

- Stopping Pitch and Load Factor

Stopping accuracy varies depending on stopping pitch and load factor. To obtain stopping accuracy, the load factors in the table below are recommended.

\* Stopping accuracy reference value: ±1.0 (300 mm/s at no load)

Stop Pitch	Load Factor
	JSG
50 mm or less	20% of Thrust
50 mm to 100 mm	40% of Thrust
100 mm or more	60% of Thrust

- Selection of Brake Valve

Stopping accuracy and overrun amount vary depending on the response of the brake valve. Select from our company's Selex Valve 4KB2 series by referring to the JSG-V brake valve electrical specifications. Also, connect the valve directly to the brake port to improve stopping accuracy.

- When using PLC (Programmable Logic Controller)

If a PLC (Programmable Logic Controller) is used for the electrical control device of the brake valve, the stopping accuracy will deteriorate due to the scan time (calculation processing time). When using a PLC, do not incorporate only the brake valve into the PLC circuit.

■ Do not significantly change the load when the brake is stopped. The stop position may change.

With Brake / With Lock

ULK□

JSK2/  
JSM2

JSG

JSC3,  
JSC4

USSD

UFCD

USC

Cylinder  
Switch

Ending

With Brake / With Lock

ULK□

JSK2/  
JSM2

JSG

JSC3,  
JSC4

USSD

UFCD

USC

Cylinder  
Switch

Ending

**CAUTION**

■ Cushion mechanisms incorporated in the cylinder include rubber cushion type and air cushion type. The purpose of the air cushion is to absorb the kinetic energy held by the piston by utilizing the compressibility of air, and to prevent the piston and cover from hitting impulsively at the stroke end. Therefore, the cushion is not for low-speed operation (deceleration operation) of the piston speed from near the stroke end. The table below shows the kinetic energy that can be absorbed by the cushion. If the kinetic energy exceeds this value or if you want to avoid bouncing due to air compressibility, please consider a separate shock absorber.

Bore Size (mm)	Rubber Cushion	Air Cushion	
	Allowable Absorbed Energy (J)	Effective Air Cushion Length (mm)	Allowable Absorbed Energy (J)
ø40	0.9	8.6	3.7
ø50	1.6	13.4	8.0
ø63	1.6	13.4	14.4
ø80	3.3	15.4	25.4
ø100	5.8	15.4	45.6

$$\text{Kinetic Energy (J)} = \frac{1}{2} \times \text{Weight (kg)} \times [\text{Speed (m/s)}]^2$$

(Note) How to calculate kinetic energy  
The average speed of the cylinder is determined by  $V_a = L/T$ .  
 $V_a$ : Average speed (m/s)  
L: Cylinder Stroke (m)  
T: Operating Time (s)

On the other hand, the cylinder speed just before entering the cushion is

It can be obtained by the following simplified formula.

$$V_m = \frac{L}{T} \times (1 + 1.5 \times \frac{\omega}{100})$$

$V_m$ : Speed just before entering cushion (m/s)

$\omega$ : Cylinder load factor (%)

For calculating kinetic energy, use this  $V_m$  value as the speed.

**During Use**

**Warning**

■ Always connect the rod tip and the load with the brake released. If done with the brake activated, rotational force or load exceeding the holding force will act on the Piston Rod, causing damage to the brake mechanism.

■ If the brake is released while only one side of the cylinder is pressurized with air, the Piston Rod will project at high speed, which is very dangerous. When releasing the brake during adjustment work, etc., always observe the following:

- Confirm that there are no people within the load's movement range when the brake is released, or that there is no problem even if the load moves.
- When releasing the brake, prevent the load from falling by
  - Placing the load at the lower end
  - Pressurizing both sides
  - Placing a support
 Implement fall prevention measures such as these.
- When releasing the brake, always confirm that only one side of the cylinder is not pressurized with air.

■ The brake can be released by manual release operation or by pressurizing the brake release port with air. During load installation, if the brake is left released by this operation, the load may fall. Therefore, always return the manual release operation to its initial state, or confirm that the brake is effective with no air in the brake release port before installation.

■ As holding force will decrease and it is dangerous, do not apply rotational force (torque) to the rod when the brake is activated. Also, use with a mechanism that prevents rod rotation.

■ Do not apply force exceeding the brake holding force stated in the catalog to the cylinder.

**Warning**

■ For the JSG series, when manually releasing the brake, screwing a Hexagon Socket Head Cap Screw into the female thread for brake release on the upper part of the brake will release the brake. However, overtightening will cause brake damage, so follow the appropriate tightening amount for release bolts in the table below.

Bore Size	Appropriate Tightening Amount
ø40	3 rotations or less
ø50	4 rotations or less
ø63	4 rotations or less
ø80	4.5 rotations or less
ø100	5 rotations or less

■ If there is play such as backlash in the dog for the brake signal, it will affect stopping accuracy, so fix it securely so there is no backlash, etc.

■ If the piston speed is high, the length of the detection dog must be sufficient to account for the relay response time. Please note that if the dog length is short, a stop signal will not be output, and it will not stop.

■ The brake unit can be removed from the Cylinder Body, but absolutely do not disassemble or inspect the brake unit, as it is dangerous upon reuse.

■ The brake unit is coated with the necessary amount of grease, so avoid applying more grease and do not wipe off the grease.

■ When replacing the brake unit, the necessary amount of grease is applied, so there is no need to apply grease to the rod.

■ As it may cause a malfunctions, always use with the dust cover included, except during manual release.

**CAUTION**

■ Adjust the air balance of the cylinder.  
With the brake released, attach the load to the cylinder and balance the load by adjusting the air pressure on the rod side and head side of the cylinder. By ensuring this load balance, problems such as the Piston Rod popping out when the brake is released or the brake not releasing normally can be prevented.

■ Adjust the mounting position of detection units such as cylinder switches.  
When performing intermediate stop, adjust the mounting position of the detection part such as the cylinder switch considering the overrun amount with respect to the desired stop position.

■ Load fluctuations during the cylinder's reciprocating stroke cause changes in piston speed, and changes in piston speed increase the variation in the stop position. Adjust the mounting so that there is no load fluctuation during the cylinder reciprocating stroke, especially immediately before stopping.

■ During the cushion stroke and while in the acceleration zone from the start of operation, the speed change is large, so the variation in the stop position will be large. Therefore, please note that if step operation with a short stroke from the start of operation to the next position is performed, the accuracy in the specification column may not be achieved.

■ Load on Piston Rod  
When moving the load, regulate it sufficiently with guides to prevent backlash or twisting.

■ Maintenance of Rod Sliding Part  
Be careful not to scratch or dent the Piston Rod sliding part. It causes damage to packings, leading to leakage or brake failure.

■ If the air supply piping is thin or long, stopping accuracy will worsen, so please consider this carefully.

■ If the cylinder has been stopped for a long time, such as first thing in the morning or first thing after lunch, frictional resistance will increase, and piston speed will change, which may worsen stopping accuracy. Perform a break-in operation to obtain stable stopping accuracy.

For precautions during mounting, installation, adjustment, use, and maintenance, refer to "During Use" in this catalog and the CKD Components Product website (<https://www.ckd.co.jp/kiki/en/>) -> "Model No." -> [Instruction Manual](#).