JSK2 / JSM2

With Brake with Lock

Brake Cylinder (Small Bore)

ø20, ø25, ø30, ø32, ø40

Overview

This is a cylinder with brake, where a highly reliable brake is included with the medium bore (ø20 to ø40) series (CMA2, CMK2) among general type cylinders.

Features

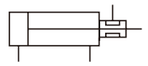
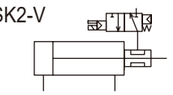
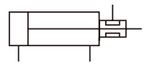
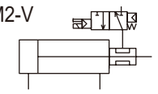
[JSK2]
Crimped type using Stainless Steel tube
Lightweight due to adoption of aluminum cover

[JSM2]
Robust design to withstand harsh operating conditions.
Cover screw-in method for easy disassembly and assembly.

CONTENTS

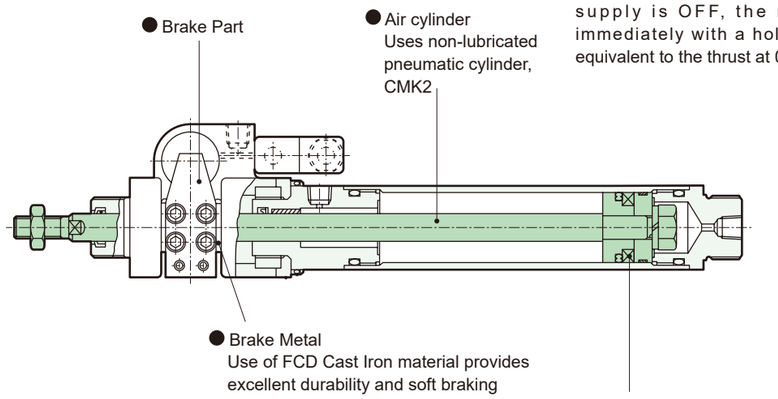
Brake Cylinder
JSK2, JSM2 Series

●: Standard, ◎: Option, : Not available

Variations	Model Number / Circuit Diagram / Code	Bore Size (mm)	Standard Stroke (mm) 25	50	75	100	125	150	175	200	250	300	Min Stroke (mm)	Max Stroke (mm)		Intermediate stroke (per mm)	Mounting Type: Basic type 00	Axial Foot Type LB	Rod Side Flange Type FA	Single clevis type CA	Single clevis integrated type CC	Rod side trunnion type TA	Head side trunnion type TB	Option: Bellows (100°C) J	Bellows (250°C) L	Piston Rod material change M	Same Port Position P	Boss cut V	With Brake Unit Cover *1 U	Accessories: Single knuckle I	Double knuckle Y	Double bracket B2	Switch	Page
Crimped type, Double Acting type	JSK2 	ø20, ø25, ø32, ø40	●	●	●	●	●	●	●	●	●	●	5	700		1	●	●	●	●	●	●	●	◎	◎	◎		◎	◎	◎	◎	◎	◎	324
Crimped type, Double Acting type, with brake valve	JSK2-V 	ø20, ø25, ø32, ø40	●	●	●	●	●	●	●	●	●	●	5	700		1	●	●	●	●	●	●	●	◎	◎	◎		◎	◎	◎	◎	◎	◎	324
Serviceable type, Double Acting type	JSM2 	ø20, ø30, ø40	●	●	●	●	●	●	●	●	●	●	1	700		1	●	●	●	●		●	●	◎	◎	◎	◎		◎	◎	◎	◎	◎	344
Serviceable type, Double Acting type, with brake valve	JSM2-V 	ø20, ø30, ø40	●	●	●	●	●	●	●	●	●	●	1	700		1	●	●	●	●		●	●	◎	◎	◎	◎		◎	◎	◎	◎	◎	344

*1: For mounting type "TA", brake unit cover "U" cannot be selected.

Product Introduction (JSK2)



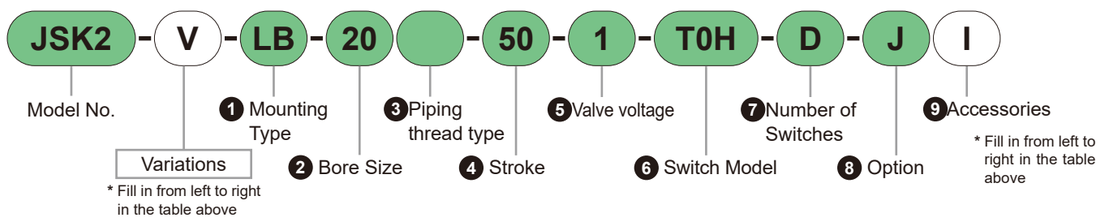
Original brake mechanism ensures high stopping accuracy and holding force
Safety is also further improved

Variation and Option Item Combination Availability Table

●Mark: Standard
◎Mark: Options
○Mark: Custom-made
△Mark: Manufacturable depending on conditions (please consult)
× Mark: Not available

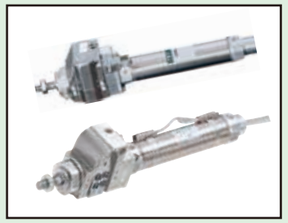
Category		Category	Variation		Piping thread		Option				
			Double Acting Basic Type	With Valve	NPT	G	With bellows, Polyolefin	With Bellows, Silicone Rubber	Piston Rod material: Stainless Steel	Boss cut	With brake unit cover
		Code	None	V	N	G	J	L	M	V	U
Variations	Double Acting Basic Type	Blank	⧸	⧸	○	○	◎	◎	◎	◎	◎
	With Valve	V		⧸	○	○	◎	◎	◎	◎	◎
Piping thread	NPT	N			⧸	x	○	○	○	○	○
	G	G				⧸	○	○	○	○	○
Options	With bellows, Polyolefin	J					⧸	x	◎	◎	◎
	With bellows, Silicone rubber	L						⧸	◎	◎	◎
	Piston Rod material: Stainless Steel	M							⧸	◎	◎
	Boss cut	V								⧸	◎
	With brake unit cover	U									⧸
Accessories	Cylinder Switch	Separately Shown	◎	◎			◎	◎	◎	◎	◎
	Single knuckle	I	◎	◎			◎	◎	◎	◎	◎
	Double knuckle	Y	◎	◎			◎	◎	◎	◎	◎
	B2 Bracket	B2	◎	◎			◎	◎	◎	◎	◎

[Model No. Example]



Model No.: Brake Cylinder
●Variation: With Valve
1 mounting style : Axial Foot Type
2 Bore Size : ø20 mm
3 Port thread : Rc Thread
4 Stroke : 50 mm
5 valve voltage : 100 VAC
6 Switch model No. : Solid State T0H Switch, Lead Wire 1 m
7 Switch quantity : With 2 pcs.
8 Options : Bellows Max Ambient Temperature 100°C
9 Accessory : Single knuckle

MEMO

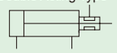


Brake Cylinder Small Bore / Crimped Type Double Acting Type / Double Acting with Brake Valve

JSK2, JSK2-V Series

●Bore Size: ø20, ø25, ø32, ø40

Circuit Diagram Code ●Double Acting Type



RoHS

Model No. Notation ●Without valve

Without Switch
(Built-in magnet for switch)

JSK2 - LB - 20 - 4 - 50 — J I
1 2 3 4 5 9 10

With Switch
(Built-in magnet for switch)

JSK2 - LB - 20 - 4 - 50 — T0H - R - J I
1 2 3 4 5 7 8 9 10

●With Valve for Brake

Without Switch
(Built-in magnet for switch)

JSK2-V - LB - 20 - 4 - 50 - 1 — J I
1 2 3 4 5 6 9 10

With Switch
(Built-in magnet for switch)

JSK2-V - LB - 20 - 4 - 50 - 1 - T0H - R - J I

1 Model Number
2 Mounting Type
3 Bore Size
4 Piping thread type
5 Stroke
6 Valve voltage
7 Switch Model
8 Number of Switches
9 Option
10 Accessories

1 Model Number

Code	Description
JSK2	Double Acting Type
JSK2-V	Double Acting with Valve

Note: Low hydraulic pressure type also manufactured as a custom item. Model numbers will be JSK2-H, JSK2-VH.

2 Mounting Type

Code	Content		Code	Content	
00	Basic Type		CC	Single clevis integrated type	
LB	Axial Foot Type		TA	Rod side trunnion type	
FA	Rod Side Flange Type		TB	Head side trunnion type	
CA	Single clevis type				

*1: When mounting style is TA, brake section cover and double bracket cannot be selected at the same time because they interfere.
*2: Mounting bracket is attached to the product for shipment. However, if bellows are included and mounting brackets are LB, FA, or TA, they will be shipped assembled.

3 Bore Size (mm)

Code	Content
20	ø20
25	ø25
32	ø32
40	ø40

4 Piping thread type

Code	Content
Blank	M5 (ø20)
	Rc thread (ø25 to ø40)
NN	NPT thread (ø25 or more) (Custom item)
GN	G thread (ø25 or more) (Custom item)

5 Stroke (mm)

Bore Size	Stroke	Intermediate Stroke
ø20	5 to 700	in 1 mm increments
ø25	5 to 700	
ø32	5 to 700	
ø40	5 to 700	

Note: For minimum stroke with switch and maximum/minimum stroke with bellows, refer to P. 326.

6 Valve voltage

Code	Content
1	100 VAC (50/60 Hz)
2	200 VAC (50/60 Hz)
3	24 VDC

Note: Valve voltage can be selected only for JSK2-V (with brake valve).

7 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) AC	Load Voltage (V) DC	Load Current (mA) AC	Load Current (mA) DC	Lead wire *1 Straight	Lead wire *1 L-shape	
Solid State	1-Color	2-wire	85 to 265	-	5 to 100	-	T1H□	T1V□	
			-	10 to 30	-	5 to 20 *2	T2H□	T2V□	
		3-wire (NPN)	-	30 or less	-	100 or less	T3H□	T3V□	
		3-wire (PNP)	-		-		T3PH□	T3PV□	
	2-color	2-wire	-	24 ± 10%	-	5 to 20	T2WH□	T2WV□	
		3-wire (NPN)	-	30 or less	-	50 or less	T3WH□	T3WV□	
	1-Color Off-Delay Type	2-wire	-	10 to 30	-	5 to 20 *2	T2JH□	T2JV□	
	1-Color Flexible Lead Wire Type		-		-		T2HR3	T2VR3	
Contact	1-Color	2-wire	110	12/24	7 to 20	5 to 50	T0H□	T0V□	
	Without Indicator Lamp		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 models are also available. (Custom Product) For details, refer to P. 1457.

***Lead wire length**

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

Example) Lead wire length
1 m T0H
3 m T0H3
5 m T0H5

8 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: The maximum number of switches mounted is limited to 3. If 4 or more are required, please arrange for the missing switch mounting brackets separately as individual items.

9 Option

Code	Content	Max Ambient Temperature	Instantaneous Max Temperature	
J	Bellows	100°C	200°C	
L	Bellows	250°C	400°C	
M	Piston Rod material (Stainless Steel)			
V	Boss cut			
U	With brake unit cover			

*1: Instantaneous maximum temperature is the temperature when sparks, cutting chips, etc., instantaneously hit the bellows.
*2: When 2 Mounting Style is TA (Rod side trunnion type),Option U (with brake unit cover) cannot be selected.

10 Accessories

Code	Content	
I	Single knuckle	
Y	Double knuckle (Pin, washer, cotter pin attached)	
B2	Double bracket (Pin, Retaining Ring attached)	

Note: I and "Y" cannot be selected simultaneously.

About specifications of custom products

For details, please refer to P. 364.

Code	Content
-XJ9	Without Bellows
-A2	With 2 Rod Nuts

Model No. Ex.)
JSK2 - ..... - XJ9

For combinations of variations and options, please refer to P. 322.

Switch Individual Model No. Notation

● Switch body+Mounting bracket set
JSK2 - T0H - 20
7 Switch Model
3 Bore Size

● Switch body only
SW - T0H
7 Switch Model

● Mounting Bracket Set
JSK2 - T - 20
Mounting Bracket
3 Bore Size

Brake Valve Model No. Notation

JSK2-V - VALVE-KIT - 1
6 Valve voltage

Specifications

Item		JSK2				JSK2-V			
Bore Size mm		ø20	ø25	ø32	ø40	ø20	ø25	ø32	ø40
Actuation method		Double Acting Type				Double Acting Type with Valve			
Operating Fluid		Compressed Air							
Max Operating Pressure MPa		1.0				0.6			
Min Operating Pressure MPa	Brake Part	0.35				0.35			
	Cylinder Part	0.10				0.10			
Proof Pressure MPa		1.6							
Ambient Temperature °C		-10 to 60 (No freezing)				-10 to 50 (No freezing)			
Port Size	Brake Part	M5	Rc1/8			M5	Rc1/8		
	Cylinder Port	Rc1/8				Rc1/8			
Stroke Tolerance mm		$^{+2.0}_{0}$(up to 200), $^{+2.4}_{0}$(200 or more)							
Operating Piston Speed mm/s		50 to 500							
Cushion		Rubber Cushion							
Lubrication		Not required (Use Turbine Oil Class 1 ISO VG32 if lubricated)							
Holding Force N		186	431	431	765	186	431	431	765
Allowable Absorbed Energy J		0.166	0.308	0.424	0.639	0.166	0.308	0.424	0.639

Brake Valve Electrical Specifications

Item	JSK2-V-VALVE-KIT-Voltage		
Rated voltage (V)	100 AC (50/60 Hz)	200 AC (50/60 Hz)	24 DC
Starting current (A)	0.056/0.044	0.034/0.026	0.075
Holding current (A)	0.028/0.022	0.017/0.013	
Power consumption (W)	1.8/1.4	2.1/1.6	1.8
Voltage fluctuation range	±10%		
Heat Resistance Class	Class B molded coil		

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

***2: For main specifications of valves (P5136 series), please refer to "Directional Control Valve ② No. RJ-012AA".**

Stroke

Bore Size (mm)	Standard Stroke (mm)	Max Stroke (mm)		Min Stroke (mm)	
		Without Bellows	With Bellows	Without Bellows	With Bellows
ø20	25, 50, 75, 100, 125, 150, 175, 200, 250, 300	700	600	5	5
ø25					
ø30					
ø40					

Note: Minimum stroke varies depending on the switch mounting method. Refer to the table below.

Minimum stroke with switch

(Unit: mm)

Number of Switches	1					2				
	Solid State			Reed		Solid State			Reed	
Bore Size (mm)	T2, T3	T1	T□W	T0, T5	T8	T2, T3	T1	T□W	T0, T5	T8
ø20	10					25	35	30	25	35
ø25	10					25	35	30	25	35
ø32	10					25	35	30	25	35
ø40	10					25	35	30	25	35

Note: Only up to 3 switches can be mounted.

Cylinder Weight

● JSK2 (Unit: kg)

Item / Mounting Style / Bore Size (mm)	Product Weight when stroke (S) = 0 mm						Switch Weight	Switch rail + band Weight	Added Weight per S = 10 mm
	Basic Type (00)	Axial Foot Type (LB)	Flange type (FA)	Clevis type (CA)	Clevis type (CC)	Trunnion Type (TA)			
ø20	0.67	0.82	0.73	0.82	0.68	0.72	Please refer to the Weight listed in the switch specifications of P. 1457	0.005	0.01
ø25	1.18	1.44	1.33	1.42	1.18	1.28		0.005	0.01
ø32	1.22	1.48	1.37	1.46	1.22	1.32		0.009	0.02
ø40	1.91	2.17	2.06	2.15	1.93	2.07		0.009	0.02

● JSK2-V (With Valve) (Unit: kg)

Item / Mounting Style / Bore Size (mm)	Product Weight when stroke (S) = 0 mm						Switch Weight	Switch rail + band Weight	Added Weight per S = 10 mm
	Basic Type (00)	Axial Foot Type (LB)	Flange type (FA)	Clevis type (CA)	Clevis type (CC)	Trunnion Type (TA)			
ø20	0.72	0.87	0.78	0.87	0.73	0.77	Please refer to the Weight listed in the switch specifications of P. 1457	0.005	0.01
ø25	1.23	1.49	1.38	1.47	1.23	1.33		0.005	0.01
ø32	1.27	1.53	1.42	1.51	1.27	1.37		0.009	0.02
ø40	1.96	2.22	2.11	2.20	1.98	2.12		0.009	0.02

(Example) JSK2-V-LB-20-100-2-TOH-D

Product Weight when S = 0 mm ..... 0.87 kg
Added weight when S = 100 mm ..... $0.01 \times \frac{100}{10} = 0.1$ kg
Weight of 2 switches..... 0.018 × 2 = 0.036 kg
Weight of switch rail+2 bands ..... 0.005 × 2 = 0.010 kg
Product Weight..... 0.87 kg + 0.1 kg + 0.036 kg + 0.010 kg = 1.016 kg

Theoretical Thrust Table

(Unit: N)

Bore Size (mm)	Operating Direction	Operating Pressure MPa						
		0.4	0.5	0.6	0.7	0.8	0.9	1.0
ø20	Push	1.26×10^2	1.57×10^2	1.88×10^2	2.20×10^2	2.51×10^2	2.83×10^2	3.14×10^2
	Pull	94.2	1.18×10^2	1.41×10^2	1.65×10^2	1.88×10^2	2.12×10^2	2.36×10^2
ø25	Push	1.96×10^2	2.45×10^2	2.95×10^2	3.44×10^2	3.93×10^2	4.42×10^2	4.91×10^2
	Pull	1.51×10^2	1.89×10^2	2.27×10^2	2.64×10^2	3.02×10^2	3.40×10^2	3.78×10^2
ø32	Push	3.22×10^2	4.02×10^2	4.83×10^2	5.63×10^2	6.43×10^2	7.24×10^2	8.04×10^2
	Pull	2.76×10^2	3.46×10^2	4.15×10^2	4.84×10^2	5.53×10^2	6.22×10^2	6.91×10^2
ø40	Push	5.03×10^2	6.28×10^2	7.54×10^2	8.80×10^2	1.01×10^3	1.13×10^3	1.26×10^3
	Pull	4.41×10^2	5.51×10^2	6.62×10^2	7.72×10^2	8.82×10^2	9.92×10^2	1.10×10^3

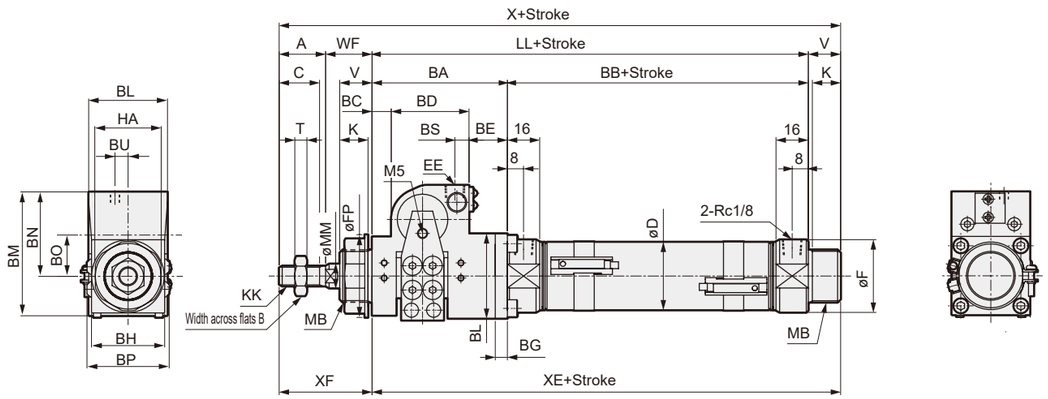
Mounting Bracket Model No. Notation

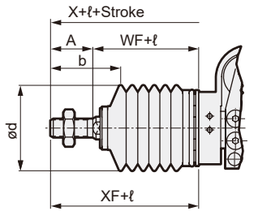
Bore Size (mm) / Mounting Bracket	ø20	ø25	ø32	ø40
Basic Type (00) *3	M1-00-20	M1-00-30	M1-00-30	M1-00-30
Axial Foot Type (LB)	M1-LB-20	M1-LB-30	M1-LB-30	M1-LB-30
Flange type (FA)	M1-FA-20	M1-FA-30	M1-FA-30	M1-FA-30
Single Clevis Type (CA)	M1-CA-20	M1-CA-30	M1-CA-30	M1-CA-30
Trunnion Type (TA/TB)	M1-TA-20	M1-TA-30	M1-TA-30	M1-TA-40

*1: Regarding mounting brackets, mounting nuts and toothed washers are included to axial foot types and flange types, and mounting nuts are included to trunnion types.
*2: For axial foot type, 2 sets of "M1-LB-□" in the above table are required.
*3: Only mounting nut and toothed washer. One set is included with the basic type (00) of the product, but please use it when additional sets are needed, etc.

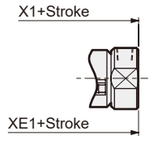
Dimensional Drawings

● Basic (JSK2-00)





[With bellows]



[Boss cut type]

Code	Without Valve / Basic Type (JSK2-00) Basic Dimensions																				
Bore Size (mm)	A	B	BA	BB	BC	BD	BE	BG	BH	BL	BM	BN	BO	BP	BS	BU	C	D	EE	F	FP	HA
ø20	20	13	58	66	9	30	19	5	29	34	55	38	19	38	4	3.8	18	21.4	M5	28	29	26
ø25	23	17	67	69	9.5	38.5	19	6	39	42	66	45	22	43.8	7	7	20	26.4	Rc1/8	32	41	35
ø32	23	17	67	69	9.5	38.5	19	6	39	42	66	45	22	43.8	7	7	20	33.6	Rc1/8	36	41	35
ø40	25	19	74	73	8	48	18	8	50	50	80.5	55.5	25	52	7	7	22	41.6	Rc1/8	45	41	35

Code												With Bellows			Boss Cut Type	
Bore Size (mm)	K	KK	LL	MB	MM	T	V	WF	X	XE	XF	b	d	ℓ	X1	XE1
ø20	12	M8x1.0	124	M18x1.5	10	5	14	24	182	138	44	30	30	(Stroke / 3)+6	168	124
ø25	14	M10x1.25	136	M26x1.5	12	6	16	23	198	152	46	32	46	(Stroke / 3.25)+7	182	136
ø32	14	M10x1.25	136	M26x1.5	12	6	16	23	198	152	46	32	46	(Stroke / 3.25)+7	182	136
ø40	14	M12x1.5	147	M26x1.5	14	7	16	23	211	163	48	34	46	(Stroke / 3.25)+7	195	147

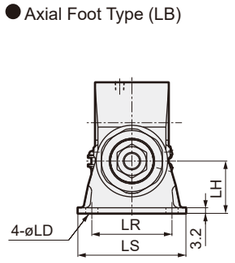
*1: Round up the ℓ dimension to the nearest integer.

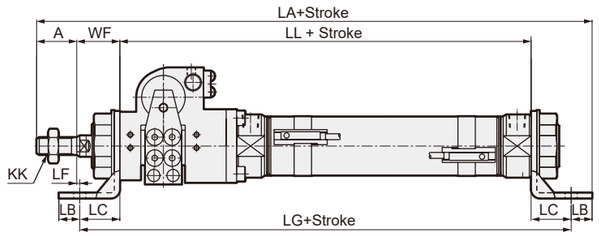
***2: For the external dimensions diagram of accessories, please refer to P. 342.**

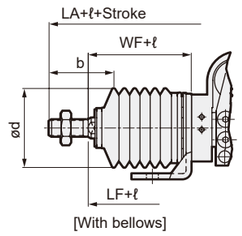
***3: For dimensions with each switch, refer to P. 360.**

Dimensional Drawings

● Axial Foot Type (LB)







[With bellows]

Code	Axial Foot Type (LB) Mounting Dimensions												
Bore Size (mm)	A	KK	LL	WF	LA	LB	LC	LD	LF	LG	LH	LR	LS
ø20	20	M8x1.0	124	24	196	10	18	6	6	160	25	30	44
ø25	23	M10x1.25	136	23	217	12	23	7	0	182	30	46	62
ø32	23	M10x1.25	136	23	217	12	23	7	0	182	30	46	62
ø40	25	M12x1.5	147	23	230	12	23	7	0	193	30	46	62

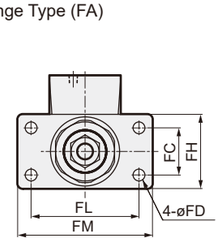
Code	With Bellows		
Bore Size (mm)	b	d	ℓ
ø20	30	30	(Stroke / 3)+6
ø25	32	46	(Stroke / 3.25)+7
ø32	32	46	(Stroke / 3.25)+7
ø40	34	46	(Stroke / 3.25)+7

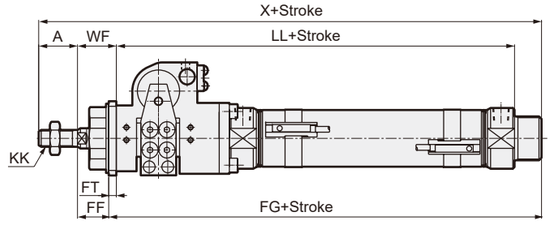
*1: Round up the ℓ dimension to the nearest integer.

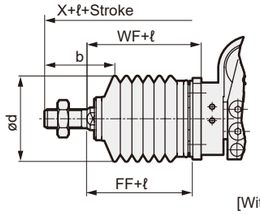
***2: For the external dimensions diagram of accessories, please refer to P. 342.**

***3: For dimensions with each switch, refer to P. 360.**

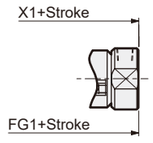
● Rod Side Flange Type (FA)







[With bellows]



[Boss cut type]

Code	Rod Side Flange Type (FA) Mounting Dimensions												
Bore Size (mm)	A	KK	LL	WF	X	FC	FD	FF	FG	FH	FL	FM	FT
ø20	20	M8x1.0	124	24	182	20	6	20.8	141.2	34	40	54	3.2
ø25	23	M10x1.25	136	23	198	28	7	18.5	156.5	44	64	80	4.5
ø32	23	M10x1.25	136	23	198	28	7	18.5	156.5	44	64	80	4.5
ø40	25	M12x1.5	147	23	211	28	7	18.5	167.5	44	64	80	4.5

Code	With Bellows			Boss Cut Type	
Bore Size (mm)	b	d	ℓ	X1	FG1
ø20	30	30	(Stroke / 3)+6	168	127.2
ø25	32	46	(Stroke / 3.25)+7	182	140.5
ø32	32	46	(Stroke / 3.25)+7	182	140.5
ø40	34	46	(Stroke / 3.25)+7	195	151.5

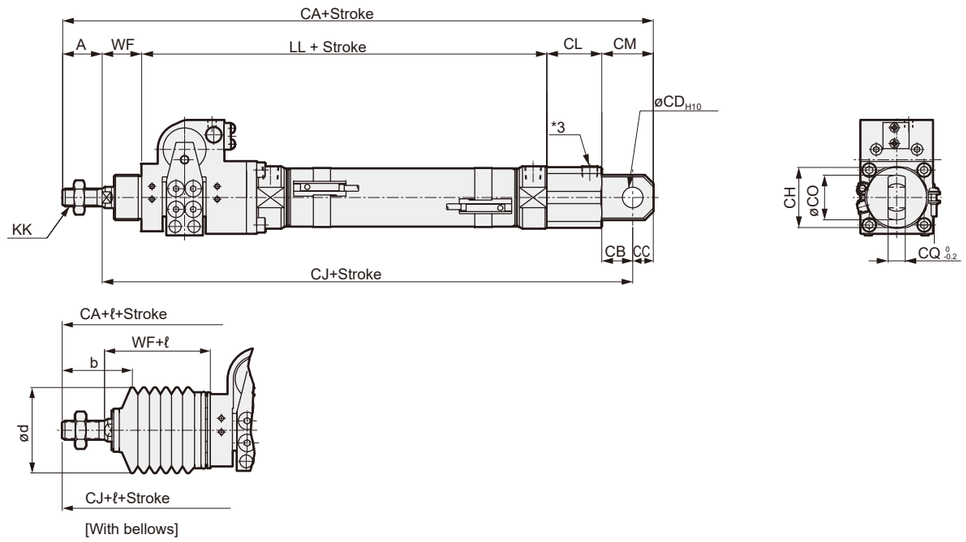
*1: Round up the ℓ dimension to the nearest integer.

***2: For the external dimensions diagram of accessories, please refer to P. 342.**

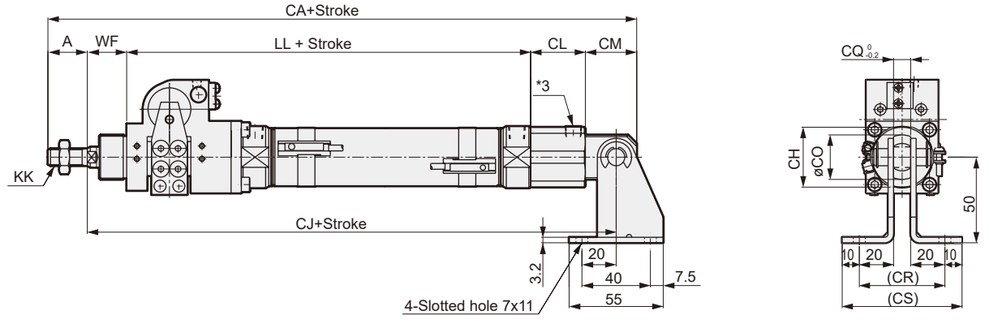
***3: For dimensions with each switch, refer to P. 360.**

Dimensional Drawings

● Single Clevis Type (CA)



● Eye bracket (CA) with bracket (option)



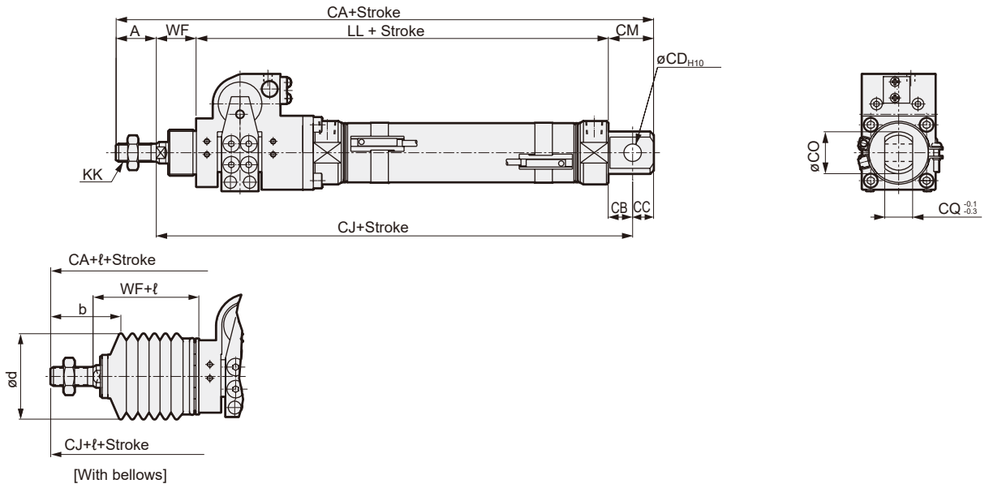
Code	Single Clevis Type (CA) Mounting Dimensions															
Bore Size (mm)	A	CH	KK	LL	WF	CA	CB	CC	CD	CJ	CL	CM	CO	CQ	CR	CS
ø20	20	26	M8x1.0	124	24	223	14	10	10	193	31	24	22	8	48	68
ø25	23	35	M10x1.25	135	23	244	18	12	12	209	32	30	26	10	50	70
ø32	23	35	M10x1.25	136	23	244	18	12	12	209	32	30	26	10	50	70
ø40	25	35	M12x1.5	147	23	257	18	12	12	220	32	30	26	10	50	70

Code	With Bellows		
Bore Size (mm)	b	d	ℓ
ø20	30	30	(Stroke / 3)+6
ø25	32	46	(Stroke / 3.25)+7
ø32	32	46	(Stroke / 3.25)+7
ø40	34	46	(Stroke / 3.25)+7

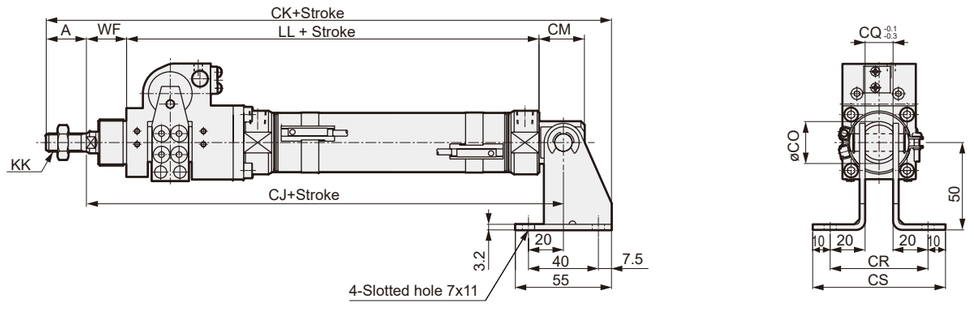
*1: This is not a piping port.
*2: Round up the ℓ dimension to the nearest integer.
***3: For the external dimensions diagram of accessories, please refer to P. 342.**
***4: For dimensions with each switch, refer to P. 360.**

Dimensional Drawings

●Single Clevis Integrated Type (CC)



● Eye bracket (CC) with bracket (option)



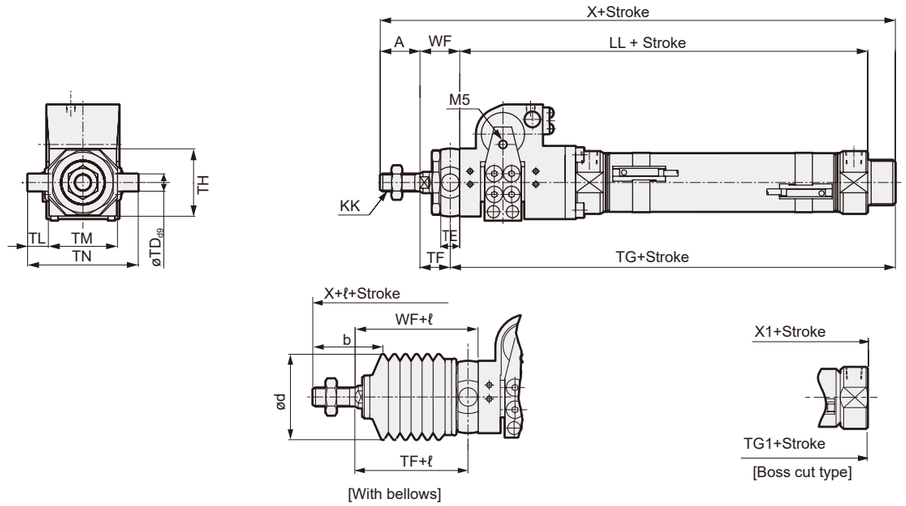
Code	Single Clevis Integrated Type (CC) Mounting Dimensions														
Bore Size (mm)	A	KK	LL	WF	CA	CB	CC	CD	CJ	CK	CM	CO	CQ	CR	CS
ø20	20	M8x1.0	124	24	189	12	9	8	160	207.5	21	22	16	56	76
ø25	23	M10x1.25	135	23	203	12	9	8	171	221.5	21	24	16	56	76
ø32	23	M10x1.25	136	23	208	14	12	10	173	223.5	26	24	16	56	76
ø40	25	M12x1.5	147	23	225	16	14	12	186	238.5	30	30	20	60	80

Code	With Bellows		
Bore Size (mm)	b	d	ℓ
ø20	30	30	(Stroke / 3)+6
ø25	32	46	(Stroke / 3.25)+7
ø32	32	46	(Stroke / 3.25)+7
ø40	34	46	(Stroke / 3.25)+7

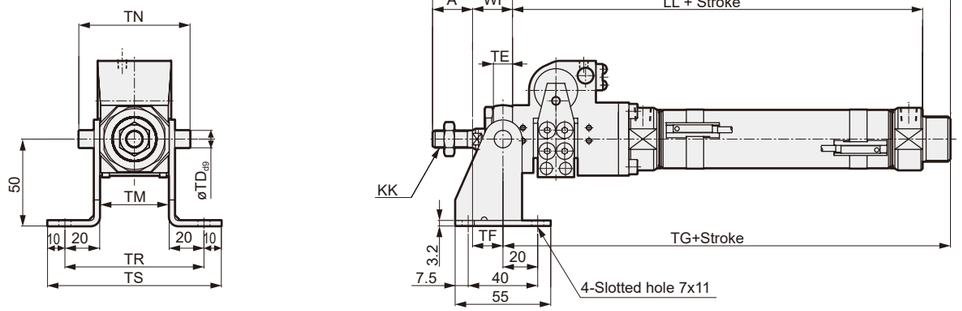
*1: Round up the ℓ dimension to the nearest integer.
***2: For the external dimensions diagram of accessories, please refer to P. 342.**
***3: For dimensions with each switch, refer to P. 360.**

Dimensional Drawings

● Rod side trunnion type (TA)



● Rod side trunnion (TA) with bracket (option)



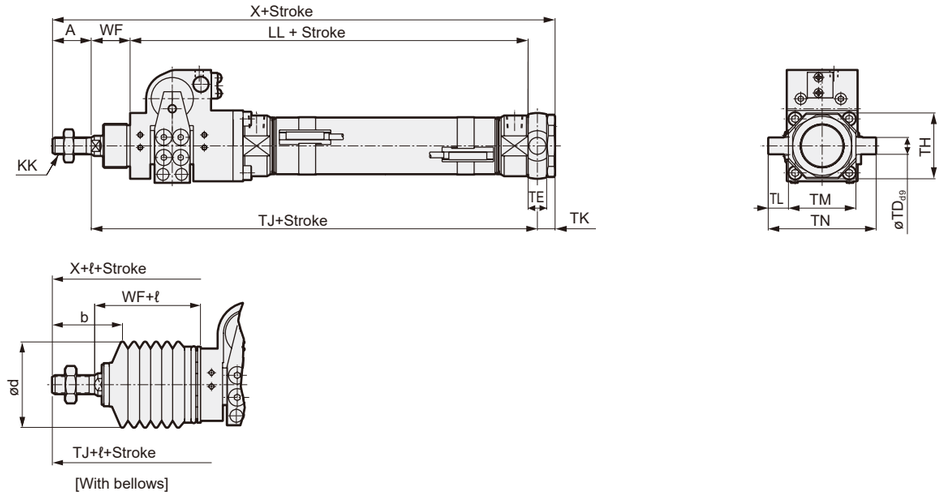
Code	Rod Type Trunnion Type (TA) Mounting Dimensions														
Bore Size (mm)	A	KK	LL	WF	X	TD	TE	TF	TG	TH	TL	TM	TN	TR	TS
ø20	20	M8x1.0	124	24	182	8	9	19.5	142.5	29.5	8	30	46	70	90
ø25	23	M10x1.25	136	23	198	10	11	17.5	157.5	39	12	40	64	80	100
ø32	23	M10x1.25	136	23	198	10	11	17.5	157.5	39	12	40	64	80	100
ø40	25	M12x1.5	147	23	211	10	11	17.5	168.5	44	9.5	53	72	93	113

Code	With Bellows			Boss Cut Type	
Bore Size (mm)	b	d	ℓ	X1	TG1
ø20	30	30	(Stroke / 3)+6	168	128.5
ø25	32	46	(Stroke / 3.25)+7	182	141.5
ø32	32	46	(Stroke / 3.25)+7	182	141.5
ø40	34	46	(Stroke / 3.25)+7	195	152.5

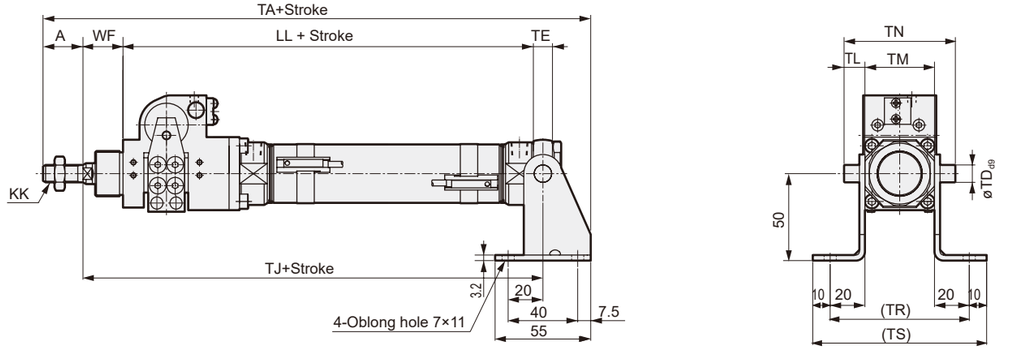
*1: Round up the ℓ dimension to the nearest integer.
*2: When brake unit cover "U" is included, bracket equipped type cannot be selected.
***3: For the external dimensions diagram of accessories, please refer to P. 342.**
***4: For dimensions with each switch, refer to P. 360.**

Dimensional Drawings

●Head Side Trunnion Type (TB)



● Head side trunnion (TB) with bracket (option)



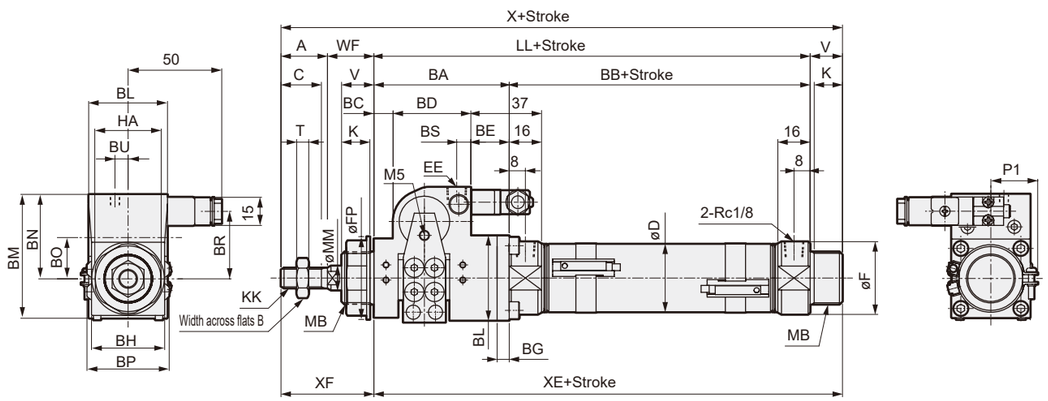
Code	Head Side Trunnion Type (TB) Mounting Dimensions														
Bore Size (mm)	A	KK	LL	WF	X	TA	TD	TE	TH	TJ	TK	TL	TM	TN	TR	TS
ø20	20	M8x1.0	124	24	182	200	8	9	29.5	152.5	9.5	8	30	46	70	90
ø25	23	M10x1.25	136	23	198	215	10	11	39	164.5	10.5	12	40	64	80	100
ø32	23	M10x1.25	136	23	198	215	10	11	39	164.5	10.5	12	40	64	80	100
ø40	25	M12x1.5	147	23	211	228	10	11	44	175.5	10.5	9.5	53	72	93	113

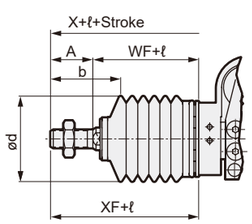
Code	With Bellows		
Bore Size (mm)	b	d	ℓ
ø20	30	30	(Stroke / 3)+6
ø25	32	46	(Stroke / 3.25)+7
ø32	32	46	(Stroke / 3.25)+7
ø40	34	46	(Stroke / 3.25)+7

*1: Round up the ℓ dimension to the nearest integer.
***2: For the external dimensions diagram of accessories, please refer to P. 342.**
***3: For dimensions with each switch, refer to P. 360.**

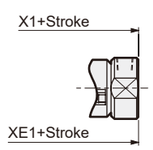
Dimensional Drawings

● Basic type (00)





[With bellows]



[Boss cut type]

Code	Without Valve / Basic Type (JSK2-00) Basic Dimensions																					
Bore Size (mm)	A	B	BA	BB	BC	BD	BE	BG	BH	BL	BM	BN	BO	BP	BR	BS	BU	C	D	EE	F	FP	HA
ø20	20	13	58	66	9	30	19	5	29	34	55	38	19	38	29	4	3.8	18	21.4	M5	28	29	26
ø25	23	17	67	69	9.5	38.5	19	6	39	42	66	45	22	43.8	34.5	7	7	20	26.4	Rc1/8	32	41	35
ø32	23	17	67	69	9.5	38.5	19	6	39	42	66	45	22	43.8	34.5	7	7	20	33.6	Rc1/8	36	41	35
ø40	25	19	74	73	8	48	18	8	50	50	80.5	55.5	25	52	39.5	7	7	22	41.6	Rc1/8	45	41	35

Code												With Bellows			Boss Cut Type	
Bore Size (mm)	K	KK	LL	MB	MM	T	V	WF	X	XE	XF	b	d	ℓ	X1	XE1
ø20	12	M8x1.0	124	M18x1.5	10	5	14	24	182	138	44	30	30	(Stroke / 3)+6	168	124
ø25	14	M10x1.25	136	M26x1.5	12	6	16	23	198	152	46	32	46	(Stroke / 3.25)+7	182	136
ø32	14	M10x1.25	136	M26x1.5	12	6	16	23	198	152	46	32	46	(Stroke / 3.25)+7	182	136
ø40	14	M12x1.5	147	M26x1.5	14	7	16	23	211	163	48	34	46	(Stroke / 3.25)+7	195	147

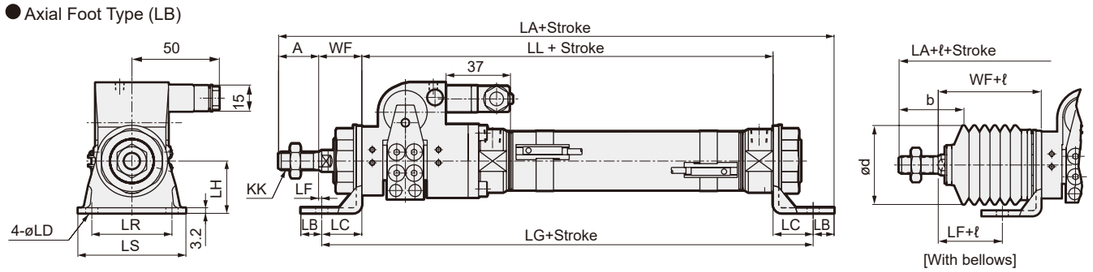
*1: Round up the ℓ dimension to the nearest integer.

***2: For the external dimensions diagram of accessories, please refer to P. 342.**

***3: For dimensions with each switch, refer to P. 360.**

Dimensional Drawings

● Axial Foot Type (LB)



[With bellows]

Code	Axial Foot Type (LB) Mounting Dimensions												
Bore Size (mm)	A	KK	LL	WF	LA	LB	LC	LD	LF	LG	LH	LR	LS
ø20	20	M8x1.0	124	24	196	10	18	6	6	160	25	30	44
ø25	23	M10x1.25	136	23	217	12	23	7	0	182	30	46	62
ø32	23	M10x1.25	136	23	217	12	23	7	0	182	30	46	62
ø40	25	M12x1.5	147	23	230	12	23	7	0	193	30	46	62

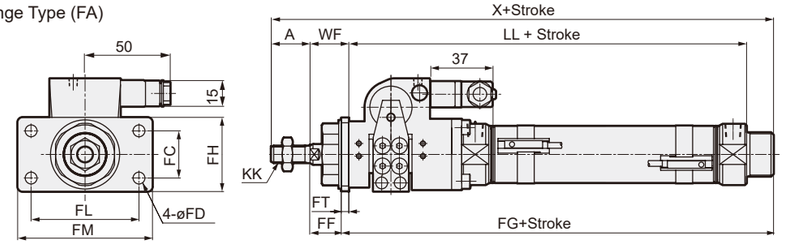
Code	With Bellows		
Bore Size (mm)	b	d	ℓ
ø20	30	30	(Stroke / 3)+6
ø25	32	46	(Stroke / 3.25)+7
ø32	32	46	(Stroke / 3.25)+7
ø40	34	46	(Stroke / 3.25)+7

*1: Round up the ℓ dimension to the nearest integer.

***2: For the external dimensions diagram of accessories, please refer to P. 342.**

***3: For dimensions with each switch, refer to P. 360.**

● Rod Side Flange Type (FA)



[With bellows]

[Boss cut type]

Code	Rod Side Flange Type (FA) Mounting Dimensions												
Bore Size (mm)	A	KK	LL	WF	X	FC	FD	FF	FG	FH	FL	FM	FT
ø20	20	M8x1.0	124	24	182	20	6	20.8	141.2	34	40	54	3.2
ø25	23	M10x1.25	136	23	198	28	7	18.5	156.5	44	64	80	4.5
ø32	23	M10x1.25	136	23	198	28	7	18.5	156.5	44	64	80	4.5
ø40	25	M12x1.5	147	23	211	28	7	18.5	167.5	44	64	80	4.5

Code	With Bellows			Boss Cut Type	
Bore Size (mm)	b	d	ℓ	X1	FG1
ø20	30	30	(Stroke / 3)+6	168	127.2
ø25	32	46	(Stroke / 3.25)+7	182	140.5
ø32	32	46	(Stroke / 3.25)+7	182	140.5
ø40	34	46	(Stroke / 3.25)+7	195	151.5

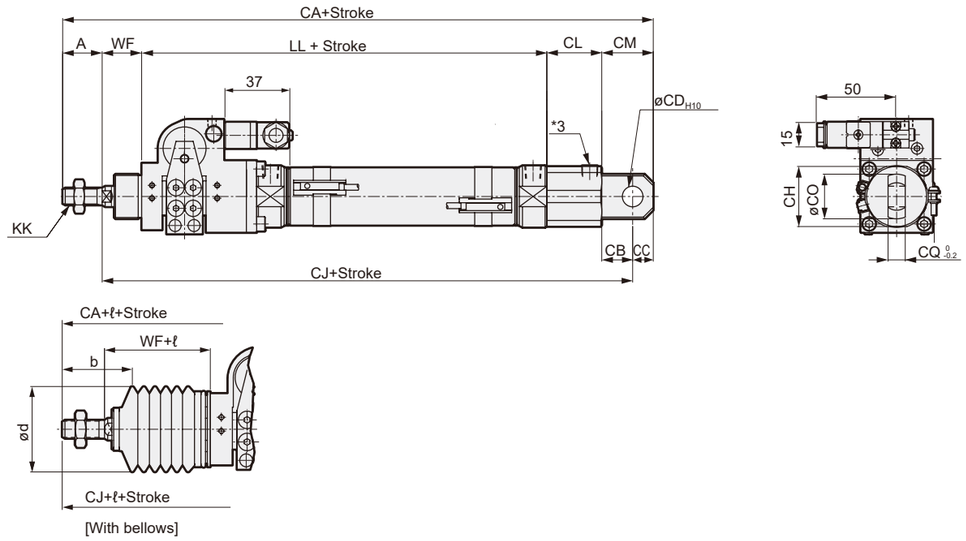
*1: Round up the ℓ dimension to the nearest integer.

***2: For the external dimensions diagram of accessories, please refer to P. 342.**

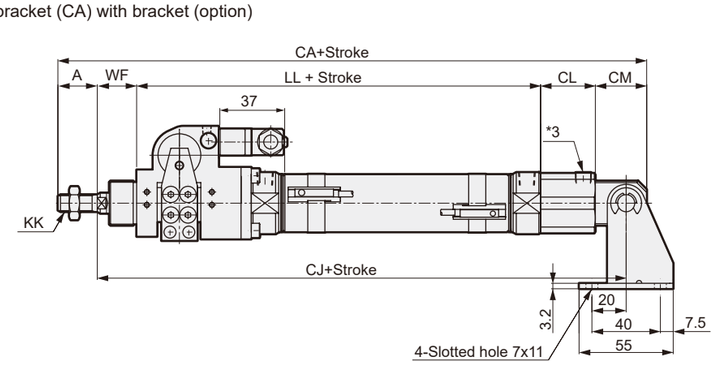
***3: For dimensions with each switch, refer to P. 360.**

Dimensional Drawings

● Single Clevis Type (CA)



● Eye bracket (CA) with bracket (option)



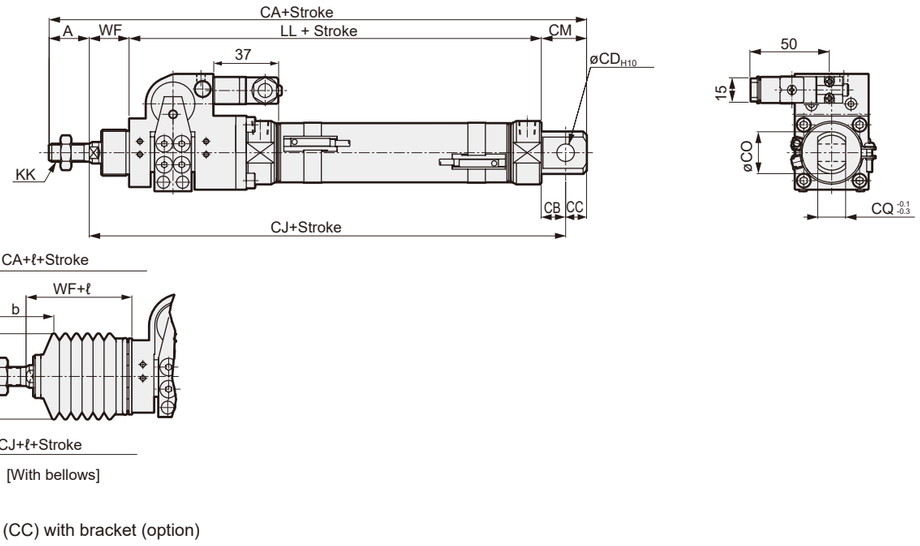
Code	Single Clevis Type (CA) Mounting Dimensions															
Bore Size (mm)	A	CH	KK	LL	WF	CA	CB	CC	CD	CJ	CL	CM	CO	CQ	CR	CS
ø20	20	26	M8x1.0	124	24	223	14	10	10	193	31	24	22	8	48	68
ø25	23	35	M10x1.25	135	23	244	18	12	12	209	32	30	26	10	50	70
ø32	23	35	M10x1.25	136	23	244	18	12	12	209	32	30	26	10	50	70
ø40	25	35	M12x1.5	147	23	257	18	12	12	220	32	30	26	10	50	70

Code	With Bellows		
Bore Size (mm)	b	d	ℓ
ø20	30	30	(Stroke / 3)+6
ø25	32	46	(Stroke / 3.25)+7
ø32	32	46	(Stroke / 3.25)+7
ø40	34	46	(Stroke / 3.25)+7

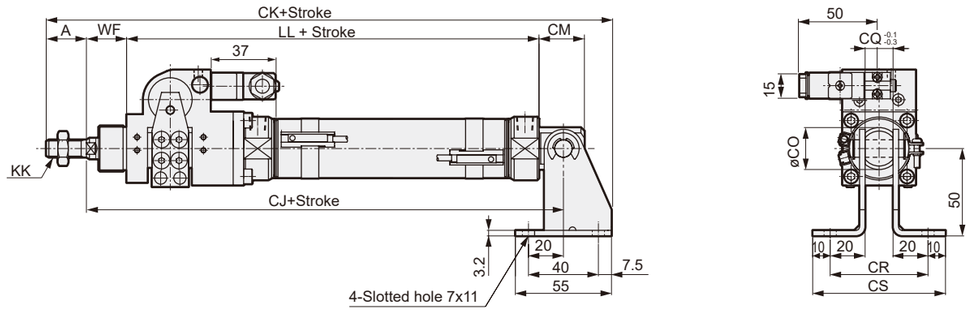
*1: This is not a piping port.
*2: Round up the ℓ dimension to the nearest integer.
***3: For the external dimensions diagram of accessories, please refer to P. 342.**
***4: For dimensions with each switch, refer to P. 360.**

Dimensional Drawings

● Single Clevis Integrated Type (CC)



● Eye bracket (CC) with bracket (option)



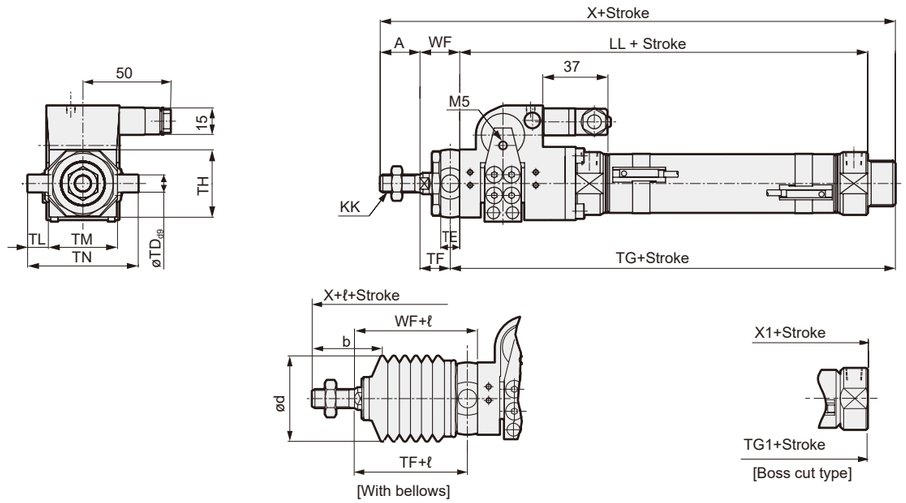
Code	Single Clevis Integrated Type (CC) Mounting Dimensions														
Bore Size (mm)	A	KK	LL	WF	CA	CB	CC	CD	CJ	CK	CM	CO	CQ	CR	CS
ø20	20	M8x1.0	124	24	189	12	9	8	160	207.5	21	22	16	56	76
ø25	23	M10x1.25	135	23	203	12	9	8	171	221.5	21	24	16	56	76
ø32	23	M10x1.25	136	23	208	14	12	10	173	223.5	26	24	16	56	76
ø40	25	M12x1.5	147	23	225	16	14	12	186	238.5	30	30	20	60	80

Code	With Bellows		
Bore Size (mm)	b	d	ℓ
ø20	30	30	(Stroke / 3)+6
ø25	32	46	(Stroke / 3.25)+7
ø32	32	46	(Stroke / 3.25)+7
ø40	34	46	(Stroke / 3.25)+7

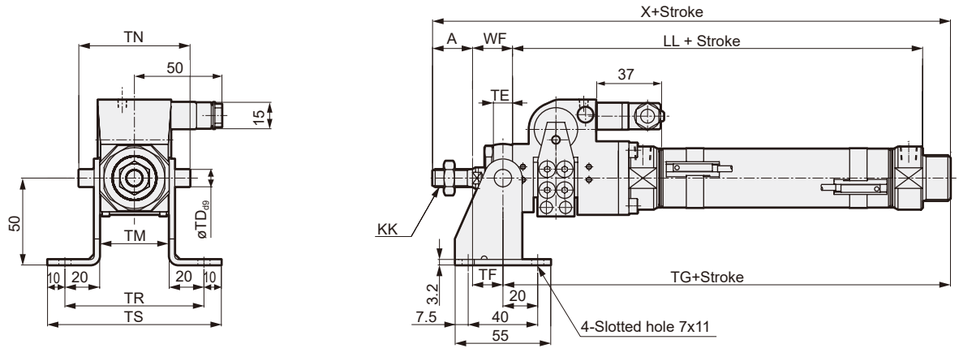
*1: Round up the ℓ dimension to the nearest integer.
***2: For the external dimensions diagram of accessories, please refer to P. 342.**
***3: For dimensions with each switch, refer to P. 360.**

Dimensional Drawings

● Rod side trunnion type (TA)



● Rod side trunnion (TA) with bracket (option)



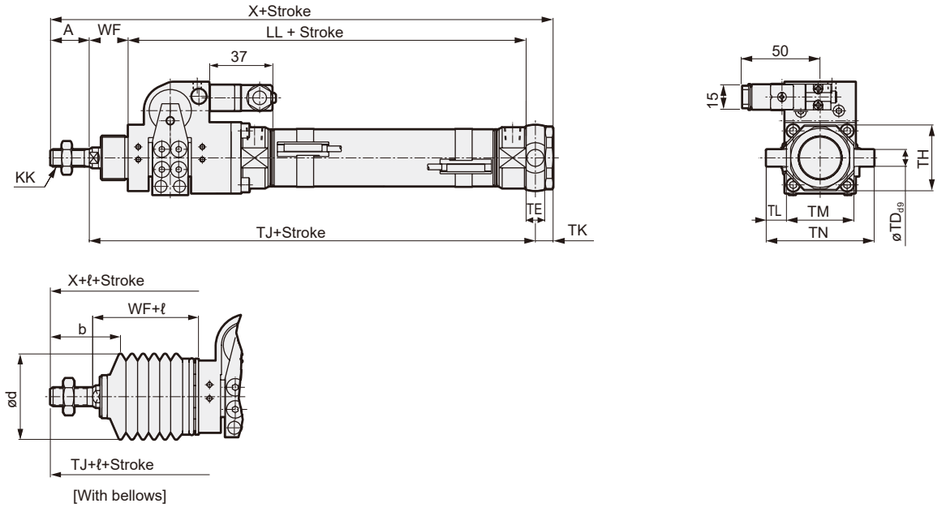
Code	Rod Type Trunnion Type (TA) Mounting Dimensions														
Bore Size (mm)	A	KK	LL	WF	X	TD	TE	TF	TG	TH	TL	TM	TN	TR	TS
ø20	20	M8x1.0	124	24	182	8	9	19.5	142.5	29.5	8	30	46	70	90
ø25	23	M10x1.25	136	23	198	10	11	17.5	157.5	39	12	40	64	80	100
ø32	23	M10x1.25	136	23	198	10	11	17.5	157.5	39	12	40	64	80	100
ø40	25	M12x1.5	147	23	211	10	11	17.5	168.5	44	9.5	53	72	93	113

Code	With Bellows			Boss Cut Type	
Bore Size (mm)	b	d	ℓ	X1	TG1
ø20	30	30	(Stroke / 3)+6	168	128.5
ø25	32	46	(Stroke / 3.25)+7	182	141.5
ø32	32	46	(Stroke / 3.25)+7	182	141.5
ø40	34	46	(Stroke / 3.25)+7	195	152.5

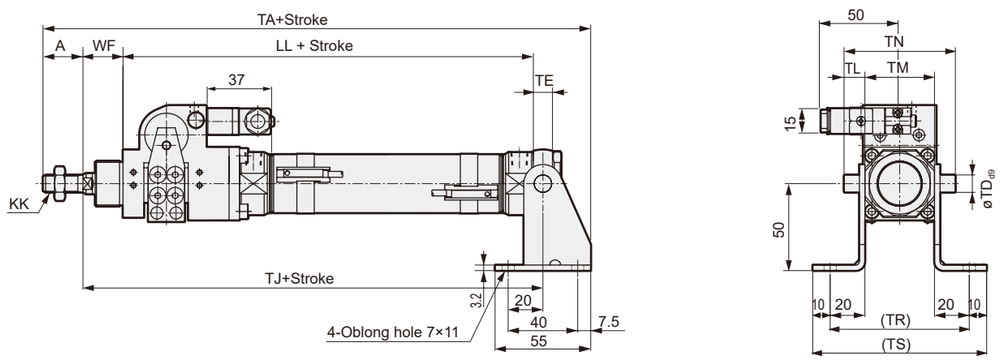
*1: Round up the ℓ dimension to the nearest integer.
*2: When brake unit cover "U" is included, bracket equipped type cannot be selected.
***3: For the external dimensions diagram of accessories, please refer to P. 342.**
***4: For dimensions with each switch, refer to P. 360.**

Dimensional Drawings

● Head Side Trunnion Type (TB)



● Head side trunnion (TB) with bracket (option)



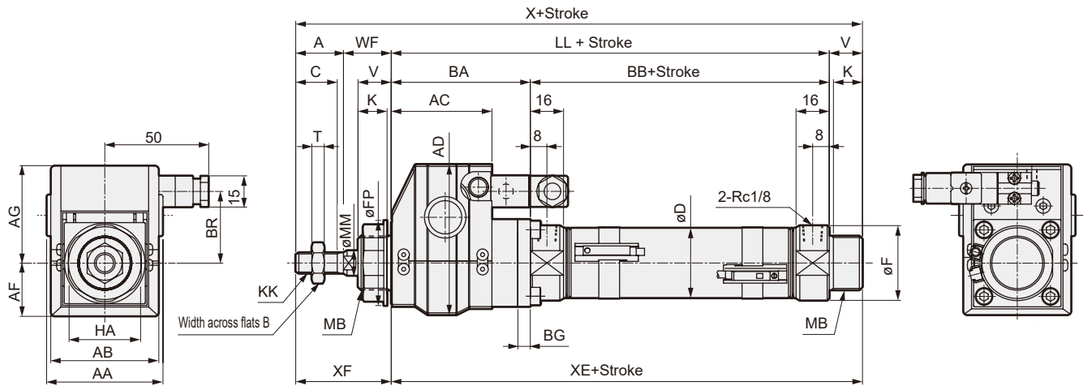
Code	Head Side Trunnion Type (TB) Mounting Dimensions														
Bore Size (mm)	A	KK	LL	WF	X	TA	TD	TE	TH	TJ	TK	TL	TM	TN	TR	TS
ø20	20	M8x1.0	124	24	182	200	8	9	29.5	152.5	9.5	8	30	46	70	90
ø25	23	M10x1.25	136	23	198	215	10	11	39	164.5	10.5	12	40	64	80	100
ø32	23	M10x1.25	136	23	198	215	10	11	39	164.5	10.5	12	40	64	80	100
ø40	25	M12x1.5	147	23	211	228	10	11	44	175.5	10.5	9.5	53	72	93	113

Code	With Bellows		
Bore Size (mm)	b	d	ℓ
ø20	30	30	(Stroke / 3)+6
ø25	32	46	(Stroke / 3.25)+7
ø32	32	46	(Stroke / 3.25)+7
ø40	34	46	(Stroke / 3.25)+7

*1: Round up the ℓ dimension to the nearest integer.
***2: For the external dimensions diagram of accessories, please refer to P. 342.**
***3: For dimensions with each switch, refer to P. 360.**

Dimensional Drawings with Option

● Brake section with cover/basic (JSK2-V-00)



Code	Basic Type (00) Basic Dimensions																		
Bore Size (mm)	A	AA	AB	AC	AD	AF	AG	B	BA	BB	BG	BR	C	D	F	FP	HA	K	KK
ø20	20	51	47	39	58.5	19.5	39	13	58	66	5	29	18	21.4	28	29	26	12	M8x1.0
ø25	23	56	52	48.5	72.5	25	47.5	17	67	69	6	34.5	20	26.4	32	41	35	14	M10×1.25
ø32	23	56	52	48.5	72.5	25	47.5	17	67	69	6	34.5	20	33.6	36	41	35	14	M10x1.25
ø40	25	69	65	56	85.75	28.75	57	19	74	73	8	39.5	22	41.6	45	41	35	14	M12x1.5

Code									
Bore Size (mm)	LL	MB	MM	T	V	WF	X	XE	XF
ø20	124	M18x1.5	10	5	14	24	182	138	44
ø25	136	M26x1.5	12	6	16	23	198	152	46
ø32	136	M26x1.5	12	6	16	23	198	152	46
ø40	147	M26x1.5	14	7	16	23	211	163	48

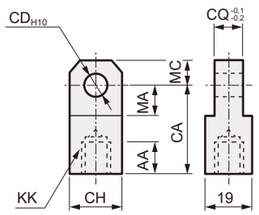
MEMO

With Brake / With Lock
ULK□
JSK2/ JSM2
JSG
JSC3, JSC4
USSD
UFCD
USC
Cylinder Switch
Ending

JSK2 / JSM2 Common Accessories Outline Dimension Drawing

● Single Knuckle (I)

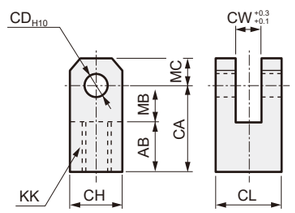
Material: Steel, Zinc Chromate



Model Number	Applicable Bore Size (mm)	AA	CA	CD	CH	CQ	KK	MA	MC	Weight (g)
M1-I-20	20	14	30	10	19	8	M8×1.0	13	10	60
M1-I-30	25, 30, 32	14	36	12	25	10	M10×1.25	16	12	106
M1-I-40	40	14	36	12	25	10	M12×1.5	16	12	100

●Double Knuckle (Y)

Material: Steel, Zinc Chromate

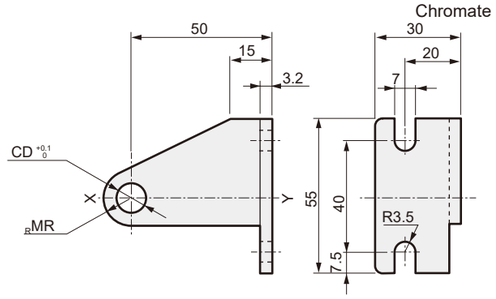


Model Number	Applicable Bore Size (mm)	AB	CA	CD	CH	CL	CW	KK	MB	MC	Weight (g)
M1-Y-20	20	17	30	10	19	19	8	M8×1.0	13	10	99
M1-Y-30	25, 30, 32	20	36	12	25	25	10	M10×1.25	16	12	197
M1-Y-40	40	20	36	12	25	25	10	M12×1.5	16	12	193

Note: Pin, washer, and cotter pin are attached.

●Double Bracket (B2)

Material: Steel, Zinc Chromate

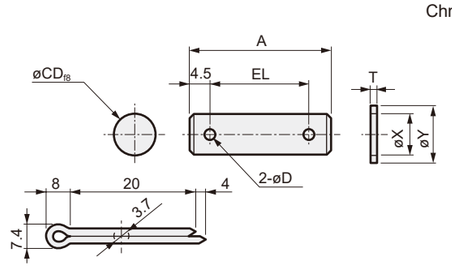


Model Number	Applicable Model	Applicable Bore Size (mm)	CD	MR	Weight (g)
M1-B2-20-CC	JSK2-CC	20/25	8	8	145
M1-B2-30-CC		32	10	11	163
M1-B2-40-CC		40	12	11	170
M1-B2-20-CA	JSK2-CA JSM2-CA	20	10	11	158
M1-B2-30-CA		25/32/40	12	11	162
M1-B2-20-TA	JSK2-TA/TB JSM2-TA/TB	20	8	8	132
M1-B2-30-TA		25, 32, 40	10	11	142

*1: A pair is symmetrical to the XY line.
*2: The above model number includes the Retaining Ring and pin. 2 pcs./ set. (However, not attached for trunnion type)
*3: Not included to mounting type TA with brake unit cover (U).

●Pin for Double Knuckle (P)

Material: Steel, Zinc Chromate

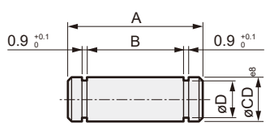


Model Number	Applicable Bore Size (mm)	A	D	CD	EL	T	X	Y	Weight (g)
M1-P-20	20	37	4	10	28	1.6	10.5	18	29
M1-P-30	25, 30, 32, 40	46	4	12	37	2.3	12.5	22	50

Note: Pin, washer, and cotter pin for double knuckle use are attached to the product.

●Pin for Double Bracket (P1) (P2)

Material: Steel Zinc Chromate

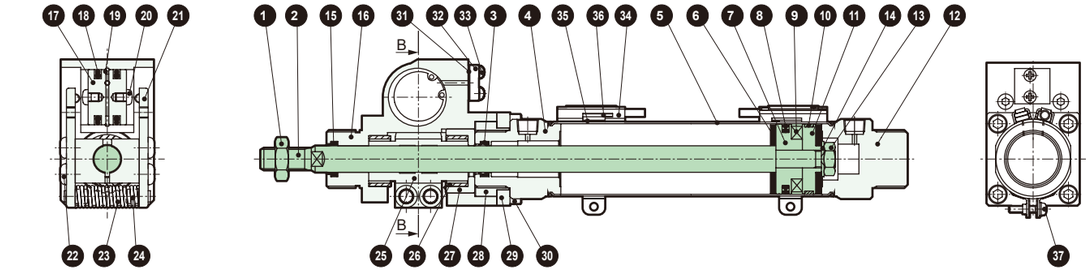


Model Number	Applicable Model and Applicable Bore Size (mm)	A	B	CD	D	Retaining Ring Used	Weight (g)
M1-P1-20	JSK2-CC-20/25	33	28	8	7	E-type 7	13
M1-P1-30	JSK2-CC-32	33	28	10	9	E-type 9	21
M1-P1-40	JSK2-CC-40	37	32	12	9	E-type 9	32
M1-P2-20	JSK2-CA-20 JSM2-CA-20	25	20	10	9	E-type 9	16
M1-P2-30	JSK2-CA-25/32/40 JSM2-CA-30/40	27	22	12	9	E-type 9	24

Note: Pin and Retaining Ring for bracket use are attached to the product. (However, not attached for trunnion type)

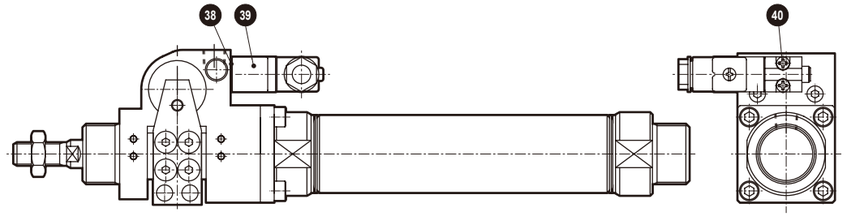
Internal Structure and Materials

● JSK2



B-B, Cross-sectional drawing

● JSK2-V (with valve)



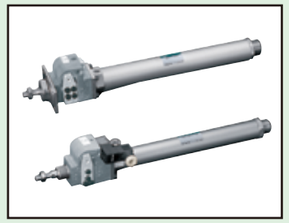
Do not disassemble

No.	Part Name	Material	Remarks	Part No.	Part Name	Material	Remarks
1	Rod Nut	Steel	Zinc Chromate	22	Hexagon Socket Button Head Screw	Steel	Black Oxide
2	Piston Rod	ø20, ø25: Stainless Steel ø32, ø40: Carbon Steel	Industrial Chrome Plating	23	Brake Spring	Steel	
				24	Hexagon Socket Head Cap Screw (ø20)	Steel	Black Oxide
					Guide pin (ø25 to ø40)	Steel	Zinc Chromate
3	Rod Packing	Nitrile Rubber		25	Brake Metal	Cast Iron	Nickel Plating
4	Rod Cover	Aluminum Alloy		26	Bushing	Bearing Alloy	
5	Cylinder Tube	Stainless Steel		27	Ring	Steel	Black Oxide
6	Cushion Rubber	Urethane Rubber		28	Fixed Ring	Steel	Zinc Chromate
7	Piston A	Aluminum Alloy		29	Square Flange	Steel	Zinc Chromate
8	Piston Packing	Nitrile Rubber		30	Hexagon Socket Head Cap Screw	Steel	Black Oxide
9	Magnet	Plastic		31	Body Gasket	Cork	
10	Wear Ring	Polyacetal		32	Masking Plate	Copper Alloy	
11	Piston B	Aluminum Alloy		33	Pan Head Screw	Steel	Zinc Chromate
12	Head Cover	Aluminum Alloy		With Switch			
13	Hexagon Nut	Steel	Zinc Chromate				
14	Spacer	Steel	Zinc Chromate (ø20 to ø32 only)	34	Switch		
15	Scraper	Nitrile Rubber		35	Band	Stainless Steel	
16	Brake Body	Cast Iron	Nickel Plating	36	Switch Rail	Stainless Steel	
17	Brake Piston	Copper Alloy		37	Pan Head Screw	Stainless Steel	
18	Piston Packing	Nitrile Rubber		With Valve			
19	C-type Retaining Ring	Stainless Steel		38	Body Gasket	Cork	
20	Pan Head Screw	Steel	Zinc Chromate	39	Brake Release Valve		P5136MO (CKD)
21	Lever	Steel	Zinc Chromate	40	Pan Head Screw	Steel	Zinc Chromate

Mounting Bracket Material

Mounting Type	Material	Remarks
Foot (LB)	Steel	Zinc Chromate
Flange (FA)	Steel	Zinc Chromate
Trunnion (TA / TB)	Steel	Zinc Chromate
Clevis (CA)	Steel	Zinc Chromate

Note: Mounting brackets are included with the product upon shipment. However, if bellows are included and mounting brackets are LB, FA, or TA, they will be shipped assembled.

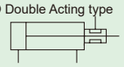


Brake Cylinder Small Bore / Serviceable Type Double Acting Type / Double Acting with Brake Valve

JSM2, JSM2-V Series

●Bore Size: ø20, ø30, ø40

Circuit Diagram Code ● Double Acting type



RoHS

Model No. Notation ●Without valve

Without Switch
(Built-in magnet for switch)

JSM2 - LB - 20 - 50 ——— P I
1 2 3 4 8 9

With Switch
(Built-in magnet for switch)

JSM2 - LB - 20 - 50 ——— T0H - R - P I
1 2 3 4 6 7 8 9

●With Valve for Brake

Without Switch
(Built-in magnet for switch)

JSM2-V - LB - 20 - 50 - 1 ——— P I
1 2 3 4 5 8 9

With Switch
(Built-in magnet for switch)

JSM2-V - LB - 20 - 50 - 1 - T0H - R - P I

1 Model No. 2 Mounting Type 3 Bore Size 4 Stroke 5 Valve voltage 6 Switch Model 7 Number of Switches 8 Option 9 Accessories

1 Model Number

Code	Description
JSM2	Double Acting Type
JSM2-V	Double Acting with Valve

Note: Low hydraulic pressure type also manufactured as a custom item. Model numbers will be JSM2-H, JSM2-VH.

2 Mounting Type

Mounting brackets are included with the product for shipment.

Code	Content		Code	Content	
00	Basic type		TA	Rod Side Trunnion Type	
LB	Axial Foot Type		TB	Head Side Trunnion Type	
FA	Rod Side Flange Type				
CA	Single clevis type				

3 Bore Size (mm)

Code	Content
20	ø20
30	ø30
40	ø40

4 Stroke (mm)

Bore Size	Stroke	Intermediate Stroke
ø20	1 to 700	Every 1 mm
ø30	1 to 700	
ø40	1 to 700	

Note: For minimum stroke with switch, refer to P. 346.

5 Valve voltage

Code	Content
1	100 VAC (50/60 Hz)
2	200 VAC (50/60 Hz)
3	24 VDC

Note: Valve voltage can be selected only for JSM2-V (with brake valve).

6 Switch Model

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

Contact	Indicator LED Special Function	Wiring (Output)	Load Voltage (V) AC	Load Voltage (V) DC	Load Current (mA) AC	Load Current (mA) DC	Lead wire *1 Straight	Lead wire *1 L-shape	
Solid State	1-Color	2-wire	85 to 265	-	5 to 100	-	T1H□	T1V□	
			—	10 to 30	-	5 to 20 *2	T2H□	T2V□	
		3-wire (NPN)	-	30 or less	-	100 or less	T3H□	T3V□	
		3-wire (PNP)	-		-		T3PH□	T3PV□	
	2-color	2-wire	-	24 ± 10%	-	5 to 20	T2WH□	T2WV□	
		3-wire (NPN)	-	30 or less	-	50 or less	T3WH□	T3WV□	
	1-Color Off-Delay Type	2-wire	-	10 to 30	-	5 to 20 *2	T2JH□	T2JV□	
	1-Color Flexible Lead Wire Type		-	10 to 30	—		T2HR3	T2VR3	
Reed	1-Color	2-wire	110	12/24	7 to 20	5 to 50	T0H□	T0V□	
	No Indicator LED		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 models are also available. (Custom Product) For details, refer to P. 1457.

***Lead wire length**

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

Example) Lead wire length
1 m T0H
3 m T0H3
5 m T0H5

7 Number of Switches

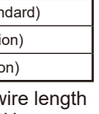
Code	Content
R	With 1 pc on rod side
H	With 1 pc on head side
D	With 2 pcs
T	With 3 pcs

8 Option

Code	Content	Max Ambient Temperature	Instantaneous Max Temperature	
J	Bellows	100°C	200°C	
L	Bellows	250°C	400°C	
M	Piston Rod material (Stainless Steel)			-
P	Same Port Position			
U	With brake unit cover			

Note: If ❷ mounting type is TA, brake unit cover (U) cannot be selected.

9 Accessories

Code	Content	
I	Single knuckle	
Y	Double knuckle (Pin, washer, cotter pin attached)	
B2	Double bracket (Pin, Retaining Ring attached)	

About specifications of custom products

For details, please refer to P. 364.

Code	Content
-XJ9	Without Bellows
-A2	With 2 Rod Nuts

Model No. Ex.)
JSM2 - ..... - XJ9

For combinations of variations and options, please refer to P. 322.

Switch Single Unit Model No. Display Method [T-type Switch]

●Switch body+Mounting bracket set
JSM2 - T0H - 20
6 Switch Model
3 Bore Size

● Switch Body Only
SW - T0H
6 Switch Model

●Mounting bracket set
JSM2 - T - 20
Mounting Bracket
3 Bore Size

Brake Valve Model No. Notation

JSM2-V - VALVE-KIT - 1
5 Valve voltage

Specifications

Item		JSM2			JSM2-V		
Bore Size mm		ø20	ø30	ø40	ø20	ø30	ø40
Actuation method		Double Acting Type			Double Acting Type with Valve		
Operating Fluid		Compressed Air					
Max Operating Pressure MPa		0.7			0.6		
Min Operating Pressure MPa	Brake Part	0.35					
	Cylinder Part	0.10					
Proof Pressure MPa		1.05					
Ambient Temperature °C		-10 to 60 (No freezing)			-10 to 50 (No freezing)		
Port Size	Brake Part	M5	Rc1/8		M5	Rc1/8	
	Cylinder Part	Rc1/8					
Stroke Tolerance mm		$^{+1.0}_{0}$ (up to 200)			$^{+1.2}_{0}$ (up to 1000)		
Operating Piston Speed mm/s		50 to 500					
Cushion		None					
Lubrication		Not required (Use Turbine Oil Class 1 ISO VG32 if lubricated)					
Holding Force N		186	431	765	186	431	765
Allowable Absorbed Energy J		0.024	0.05	0.093	0.024	0.05	0.093

Note: This product cannot absorb large energy generated by external loads. It is recommended to use an external shock absorbing device in conjunction.

Brake Valve Electrical Specifications

Item	JSM2-V-VALVE-KIT-Voltage		
Rated voltage (V)	100 AC (50/60 Hz)	200 AC (50/60 Hz)	24 DC
Starting current (A)	0.056/0.044	0.034/0.026	0.075
Holding current (A)	0.028/0.022	0.017/0.013	
Power consumption (W)	1.8/1.4	2.1/1.6	1.8
Voltage fluctuation range	±10%		
Heat Resistance Class	Class B molded coil		

*1: 100/200 VAC coils can be used at 110/220 VAC (60 Hz).
***2: For main specifications of valves (P5136 series), please refer to "Directional Control Valve ② No. RJ-012AA".**

Stroke

Bore Size (mm)	Standard Stroke (mm)	Max Stroke (mm)	Min Stroke (mm)
ø20	25, 50, 75, 100, 125, 150 175, 200, 250, 300	700	1
ø30			
ø40			

Note: For models with switches, the minimum stroke varies depending on the mounting method. Refer to the table below. Intermediate strokes can be manufactured in 1 mm increments.

Min Stroke with Switch (T-type Switch)

Switch Model	With 1 pc	With 2 pcs
T0, T5, T2, T3	10	27
T2W, T3W	10	31
T1	10	25
T8	10	23

Cylinder Weight

(Unit: kg)

Item / Mounting Style / Bore Size (mm)	Product Weight when stroke (S) = 0 mm: Basic Type (00)	Axial Foot Type (LB)	Flange Type (FA)	Clevis Type (CA)	Trunnion Type (TA/TB)	Switch Weight	Switch rail + band Weight	Valve Weight	Added Weight per S = 10 mm
ø20	0.48	0.63	0.54	0.61	0.53	Refer to the weight described in the switch specifications on P. 1457.	0.005	0.07	0.01
ø30	0.94	1.20	1.09	1.15	1.04		0.005		0.014
ø40	1.57	1.83	1.72	1.79	0.73		0.009		0.02

(Example) JSM2-V-LB-20-100-2-TOH-D

Product Weight when S = 0 mm 0.73 kg
Added weight when S = 100 mm $0.01\times\frac{100}{10}$ = 0.1 kg
Weight of 2 switches ..... (0.018 + 0.005) ×2 = 0.046 kg
Product weight ..... 0.73 kg + 0.1 kg + 0.046 kg = 0.88 kg

Theoretical Thrust Table

(Unit: N)

Bore Size (mm)	Operating Direction	Operating Pressure MPa: 0.1	0.15	0.2	0.3	0.4	0.5	0.6	0.7
ø20	Push	31.4	47.1	62.8	94.2	1.26×10^2	1.57×10^2	1.88×10^2	2.20×10^2
	Pull	23.6	35.3	47.1	70.7	94.2	1.18×10^2	1.41×10^2	1.65×10^2
ø30	Push	70.7	1.06×10^2	1.41×10^2	2.12×10^2	2.83×10^2	3.53×10^2	4.24×10^2	4.95×10^2
	Pull	59.4	89.1	1.19×10^2	1.78×10^2	2.38×10^2	2.97×10^2	3.56×10^2	4.16×10^2
ø40	Push	1.26×10^2	1.88×10^2	2.51×10^2	3.77×10^2	5.03×10^2	6.28×10^2	7.54×10^2	8.80×10^2
	Pull	1.10×10^2	1.65×10^2	2.21×10^2	3.31×10^2	4.41×10^2	5.51×10^2	6.62×10^2	7.72×10^2

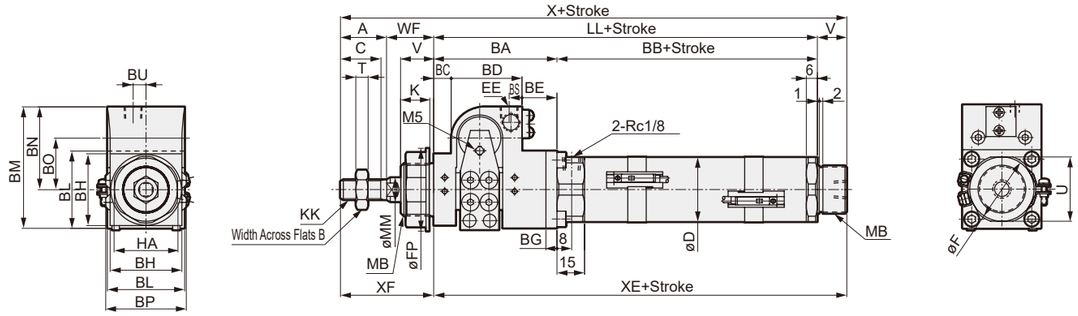
Mounting Bracket Model No. Notation

Bore Size (mm) / Mounting Bracket	ø20	ø30	ø40
Basic Type (00) *3	M1-0020	M1-00-30	M1-00-30
Axial Foot Type (LB)	M1-LB-20	M1-LB-30	M1-LB-30
Flange type (FA)	M1-FA-20	M1-FA-30	M1-FA-30
Single Clevis Type (CA)	M1-CA-20	M1-CA-30	M1-CA-30
Trunnion Type (TA/TB)	M1-TA-20	M1-TA-30	M1-TA-40

*1: Regarding mounting brackets, mounting nuts and toothed washers are included to axial foot types and flange types, and mounting nuts are included to trunnion types.
2: For axial foot type, 2 sets of "M1-LB-" in the above table are required.
*3: Only mounting nut and toothed washer. One set is included with the basic type (00) of the product, but please use it when additional sets are needed, etc.

Dimensional Drawings

● Basic type (00)



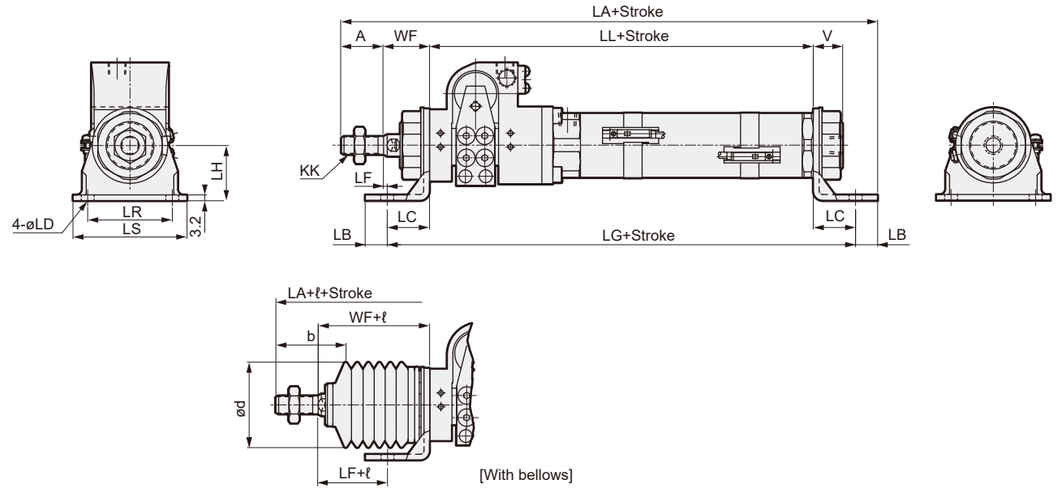
Code	Basic Type (00) Basic Dimensions																			
Bore Size (mm)	A	B	BA	BB	BC	BD	BE	BG	BH	BL	BM	BN	BO	BP	BS	BU	C	D	EE	F	FP
ø20	20	13	58	66	9	30	19	5	29	34	55	38	19	38	4	3.8	18	25	M5	28	29
ø30	23	17	67	72	9.5	38.5	19	6	39	42	66	45	22	43.8	7	7	20	35	Rc1/8	37	41
ø40	25	19	74	74	8	48	18	8	50	50	80.5	55	25	52	7	7	22	45	Rc1/8	48	41

Code														With Bellows		
Bore Size (mm)	HA	K	KK	LL	MB	MM	T	U	V	WF	X	XE	XF	b	d	ℓ
ø20	26	12	M8x1.0	124	M18x1.5	10	5	26	14	24	182	138	44	32	30	(Stroke/3)+6
ø30	35	14	M10x1.25	139	M26x1.5	12	6	35	16	23	201	155	46	38	46	(Stroke/3.25)+7
ø40	35	14	M12x1.5	148	M26x1.5	14	7	46	16	23	212	164	48	40	46	(Stroke/3.25)+7

*1: Round up the ℓ dimension to the nearest whole number.
***2: For the external dimensions diagram of accessories, please refer to P. 342.**
***3: For dimensions with each switch, refer to P. 360.**

Dimensional Drawings

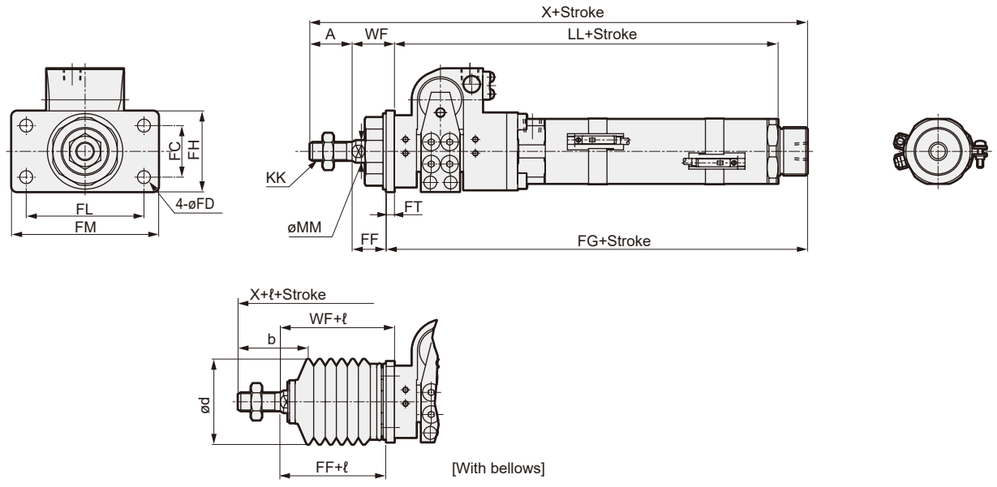
●Axial Foot Type (LB)



Code	Axial Foot Type (LB) Mounting Dimensions													With Bellows		
Bore Size (mm)	A	KK	LL	WF	LA	LB	LC	LD	LF	LG	LH	LR	LS	b	d	ℓ
ø20	20	M8x1.0	124	24	196	10	18	6	6	160	25	30	44	32	30	(Stroke/3)+6
ø30	23	M10x1.25	139	23	220	12	23	7	0	185	30	46	62	38	46	(Stroke/3.25)+7
ø40	25	M12x1.5	148	23	231	12	23	7	0	194	30	46	62	40	46	(Stroke/3.25)+7

*1: Round up the ℓ dimension to the nearest whole number.
***2: For outline dimension drawings of accessories, please refer to P. 342.**
***3: For dimensions with each switch, refer to P. 360.**

● Rod Side Flange Type (FA)

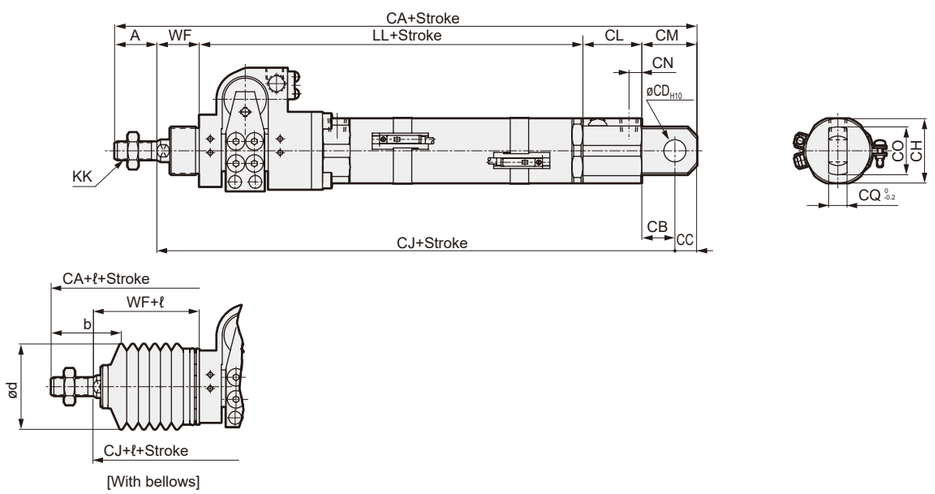


Code	Rod Side Flange Type (FA) Mounting Dimensions													With Bellows		
Bore Size (mm)	A	KK	LL	WF	X	FC	FD	FF	FG	FH	FL	FM	FT	b	d	ℓ
ø20	20	M8x1.0	124	24	182	20	6	20.8	141.2	34	40	54	3.2	32	30	(Stroke/3)+6
ø30	23	M10x1.25	139	23	201	28	7	18.5	159.5	44	64	80	4.5	38	46	(Stroke/3.25)+7
ø40	25	M12x1.5	148	23	212	28	7	18.5	168.5	44	64	80	4.5	40	46	(Stroke/3.25)+7

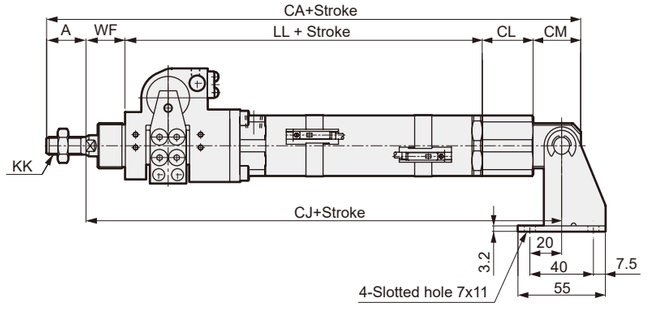
*1: Round up the ℓ dimension to the nearest whole number.
***2: For outline dimension drawings of accessories, please refer to P. 342.**
***3: For dimensions with each switch, refer to P. 360.**

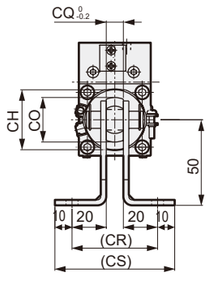
Dimensional Drawings

● Single Clevis Type (CA)



● Eye bracket (CA) with bracket (option)





Code	Single Clevis Type (CA) Mounting Dimensions																With Bellows		
Bore Size (mm)	A	KK	LL	WF	CA	CB	CC	CD	CH	CJ	CL	CM	CN	CO	CQ	CR	CS	b	d	ℓ
ø20	20	M8x1.0	124	24	223	14	10	10	26	193	31	24	8	22	8	48	68	32	30	(Stroke/3)+6
ø30	23	M10x1.25	139	23	247	18	12	12	35	212	32	30	7	26	10	50	70	38	46	(Stroke/3.25)+7
ø40	25	M12x1.5	148	23	258	18	12	12	35	221	32	30	7	26	10	50	70	40	46	(Stroke/3.25)+7

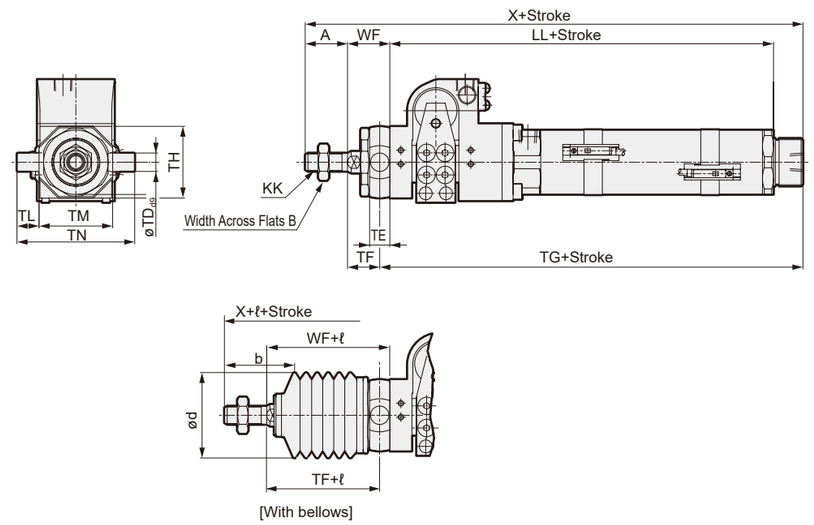
*1: Round up the ℓ dimension to the nearest whole number.

***2: For the external dimensions diagram of accessories, please refer to P. 342.**

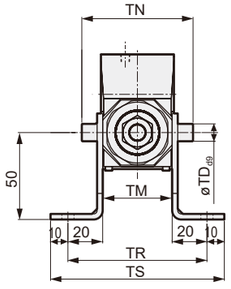
***3: For dimensions with each switch, refer to P. 360.**

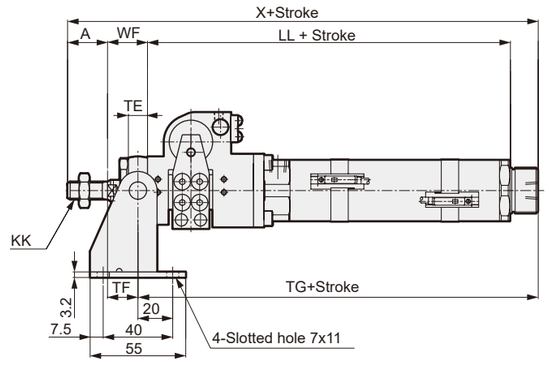
Dimensional Drawings

● Rod side trunnion type (TA)



● Rod side trunnion (TA) with bracket (option)





Code	Rod Side Trunnion Type (TA) Mounting Dimensions														With Bellows		
Bore Size (mm)	A	KK	LL	WF	X	TD	TE	TF	TG	TH	TL	TM	TN	TR	TS	b	d	ℓ
ø20	20	M8x1.0	124	24	182	8	9	19.5	142.5	29.5	8	30	46	70	90	32	30	(Stroke/3)+6
ø30	23	M10x1.25	139	23	201	10	11	17.5	160.5	39	12	40	64	80	100	38	46	(Stroke/3.25)+7
ø40	25	M12x1.5	148	23	212	10	11	17.5	169.5	44	9.5	53	72	93	113	40	46	(Stroke/3.25)+7

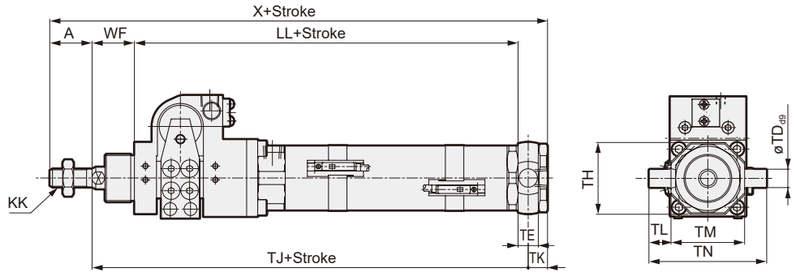
*1: Round up the ℓ dimension to the nearest whole number.

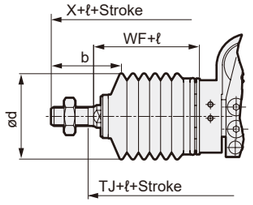
***2: For outline dimension drawings of accessories, please refer to P. 342.**

***3: For dimensions with each switch, refer to P. 360.**

Dimensional Drawings

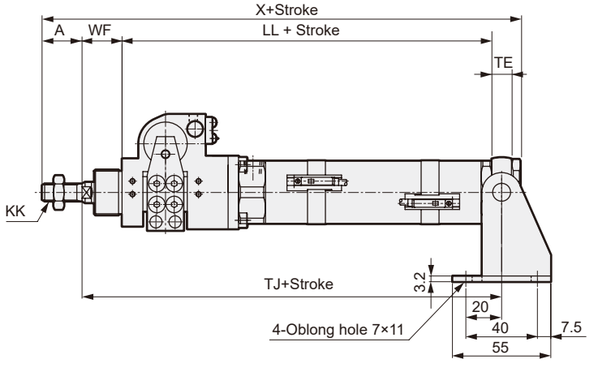
●Head Side Trunnion Type (TB)

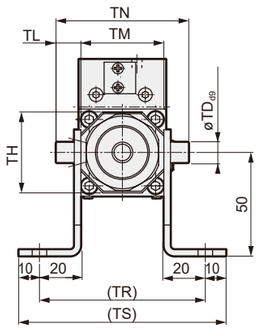




[With bellows]

● Head side trunnion (TB) with bracket (option)



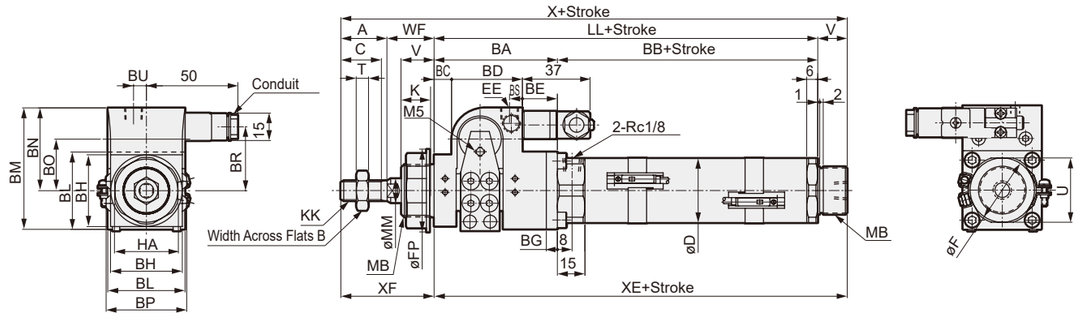


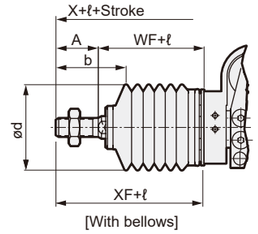
Code	Head Side Trunnion Type (TB) Mounting Dimensions															With Bellows		
Bore Size (mm)	A	KK	LL	WF	X	TD	TE	TH	TJ	TK	TL	TM	TN	TR	TS	b	d	ℓ
ø20	20	M8x1.0	124	24	182	8	9	29.5	152.5	9.5	8	30	46	70	90	32	30	(Stroke/3)+6
ø30	23	M10x1.25	139	23	201	10	11	39	167.5	10.5	12	40	64	80	100	38	46	(Stroke/3.25)+7
ø40	25	M12x1.5	148	23	212	10	11	44	176.5	10.5	9.5	53	72	93	113	40	46	(Stroke/3.25)+7

*1: Round up the ℓ dimension to the nearest whole number.
***2: For outline dimension drawings of accessories, please refer to P. 342.**
***3: For dimensions with each switch, refer to P. 360.**

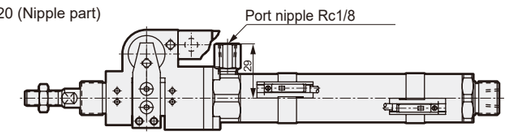
Dimensional Drawings

● Basic (JSM2-00)





[With bellows]



Note: JSM2 Bore Size ø20 has a port nipple attached as shown above. (Rod side only) The shape excluding the port nipple is the same as ø30 and ø40.

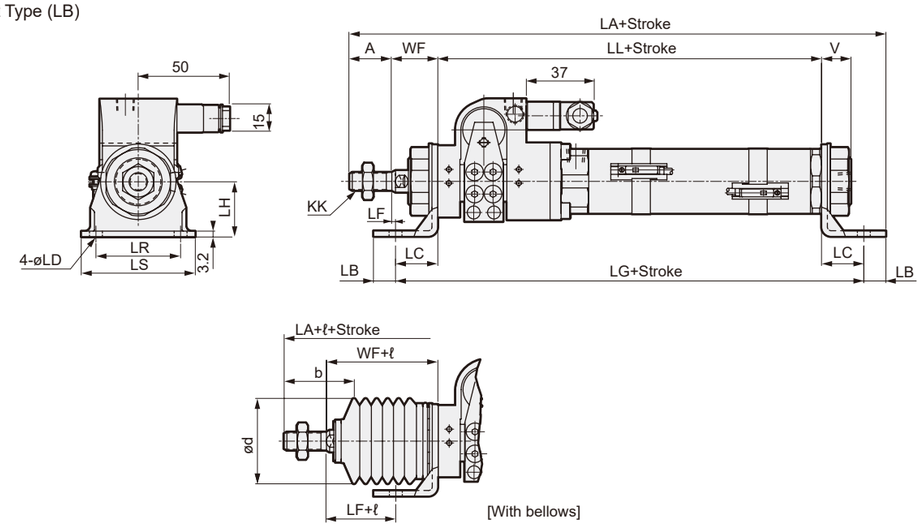
Code	Basic Type (00) Basic Dimensions																					With Bellows		
Bore Size (mm)	A	B	BA	BB	BC	BD	BE	BG	BH	BL	BM	BN	BO	BP	BR	BS	BU	C	D	EE	F	FP	b	d	ℓ
ø20	20	13	58	66	9	30	19	5	29	34	55	38	19	38	29	4	3.8	18	25	M5	28	29			
ø30	23	17	67	72	9.5	38.5	19	6	39	42	66	45	22	43.8	34.5	7	7	20	35	Rc1/8	37	41			
ø40	25	19	74	74	8	48	18	8	50	50	80.5	55	25	52	39.5	7	7	22	45	Rc1/8	48	41			

Code														With Bellows		
Bore Size (mm)	HA	K	KK	LL	MB	MM	T	U	V	WF	X	XE	XF	b	d	ℓ
ø20	26	12	M8x1.0	124	M18x1.5	10	5	26	14	24	182	138	44	32	30	(Stroke/3)+6
ø30	35	14	M10x1.25	139	M26x1.5	12	6	35	16	23	201	155	46	38	46	(Stroke/3.25)+7
ø40	35	14	M12x1.5	148	M26x1.5	14	7	46	16	23	212	164	48	40	46	(Stroke/3.25)+7

*1: Brake unit exhaust port size is the same as EE dimension.
*2: For ø30 and ø40, the conduit of the valve terminal box is on the opposite side of this figure.
***3: For outer dimensions diagram of accessories, refer to P. 342.**
***4: For dimensions with each switch, refer to P. 360.**

Dimensional Drawings

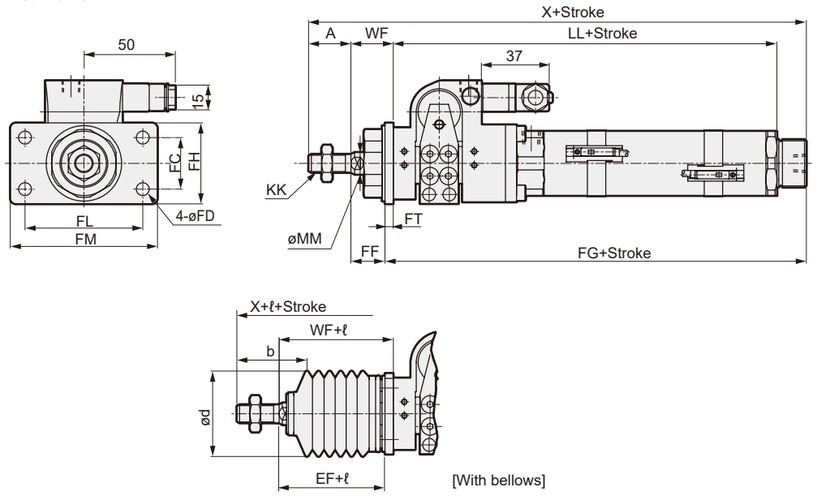
●Axial Foot Type (LB)



Code	Axial Foot Type (LB) Mounting Dimensions													With Bellows		
Bore Size (mm)	A	KK	LL	WF	LA	LB	LC	LD	LF	LG	LH	LR	LS	b	d	ℓ
ø20	20	M8x1.0	124	24	196	10	18	6	6	160	25	30	44	32	30	(Stroke/3)+6
ø30	23	M10x1.25	139	23	220	12	23	7	0	185	30	46	62	38	46	(Stroke/3.25)+7
ø40	25	M12x1.5	148	23	231	12	23	7	0	194	30	46	62	40	46	(Stroke/3.25)+7

*1: Round up the ℓ dimension to the nearest whole number.
***2: For outline dimension drawings of accessories, please refer to P. 342.**
***3: For dimensions with each switch, refer to P. 360.**

● Rod Side Flange Type (FA)

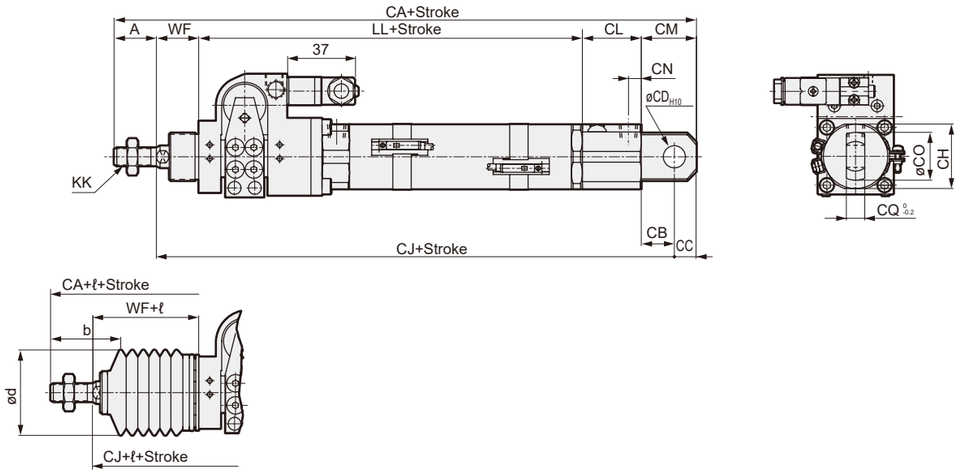


Code	Rod Side Flange Type (FA) Mounting Dimensions													With Bellows		
Bore Size (mm)	A	KK	LL	WF	X	FC	FD	FF	FG	FH	FL	FM	FT	b	d	ℓ
ø20	20	M8x1.0	124	24	182	20	6	20.8	141.2	34	40	54	3.2	32	30	(Stroke/3)+6
ø30	23	M10x1.25	139	23	201	28	7	18.5	159.5	44	64	80	4.5	38	46	(Stroke/3.25)+7
ø40	25	M12x1.5	148	23	212	28	7	18.5	168.5	44	64	80	4.5	40	46	(Stroke/3.25)+7

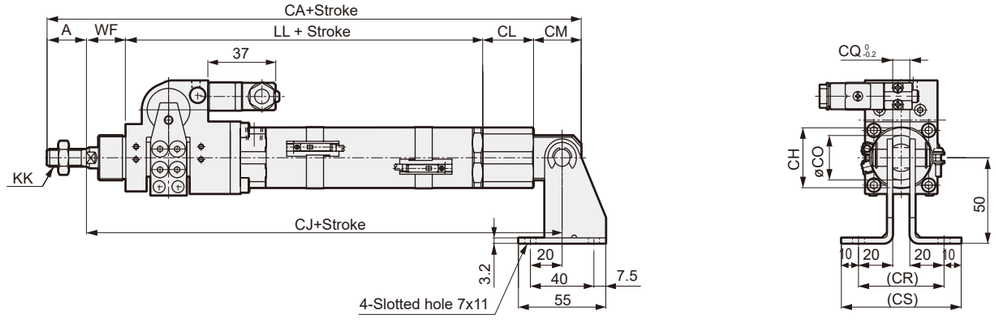
*1: Round up the ℓ dimension to the nearest whole number.
***2: For outline dimension drawings of accessories, please refer to P. 342.**
***3: For dimensions with each switch, refer to P. 360.**

Dimensional Drawings

●Single Clevis Type (CA)



● Eye bracket (CA) with bracket (option)

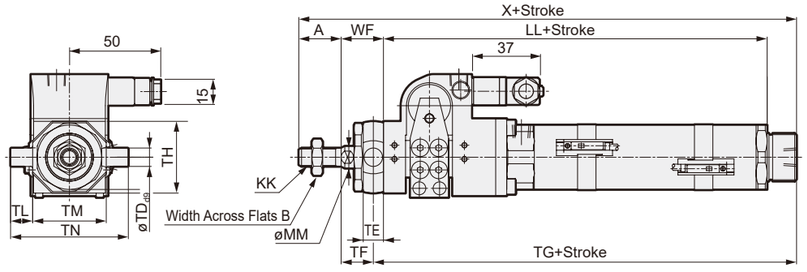


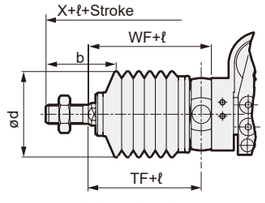
Code	Single Clevis Type (CA) Mounting Dimensions																	With Bellows		
Bore Size (mm)	A	KK	LL	WF	CA	CB	CC	CD	CH	CJ	CL	CM	CN	CO	CQ	CR	CS	b	d	ℓ
ø20	20	M8x1.0	124	24	223	14	10	10	26	193	31	24	8	22	8	48	68	32	30	(Stroke/3)+6
ø30	23	M10x1.25	139	23	247	18	12	12	35	212	32	30	7	26	10	50	70	38	46	(Stroke/3.25)+7
ø40	25	M12x1.5	148	23	258	18	12	12	35	221	32	30	7	26	10	50	70	40	46	(Stroke/3.25)+7

*1: Round up the ℓ dimension to the nearest whole number.
***2: For the external dimensions diagram of accessories, please refer to P. 342.**
***3: For dimensions with each switch, refer to P. 360.**

Dimensional Drawings

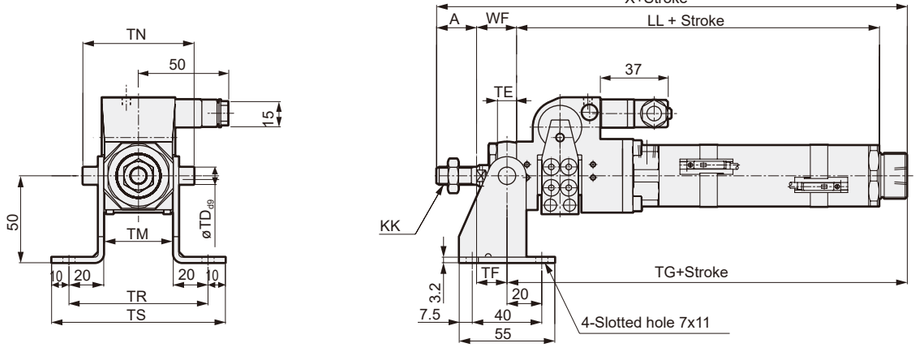
●Rod side trunnion type (TA)





[With bellows]

● Rod side trunnion (TA) with bracket (option)



Code	Rod Side Trunnion Type (TA) Mounting Dimensions															With Bellows		
Bore Size (mm)	A	KK	LL	WF	X	TD	TE	TF	TG	TH	TL	TM	TN	TR	TS	b	d	ℓ
ø20	20	M8x1.0	124	24	182	8	9	19.5	142.5	29.5	8	30	46	70	90	32	30	(Stroke/3)+6
ø30	23	M10x1.25	139	23	201	10	11	17.5	160.5	39	12	40	64	80	100	38	46	(Stroke/3.25)+7
ø40	25	M12x1.5	148	23	212	10	11	17.5	169.5	44	9.5	53	72	93	113	40	46	(Stroke/3.25)+7

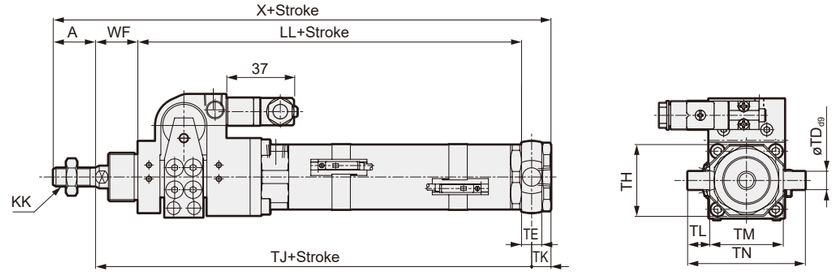
*1: Round up the ℓ dimension to the nearest whole number.

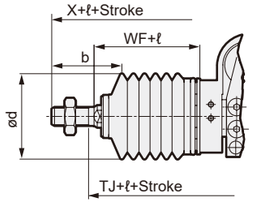
***2: For outline dimension drawings of accessories, please refer to P. 342.**

***3: For dimensions with each switch, refer to P. 360.**

Dimensional Drawings

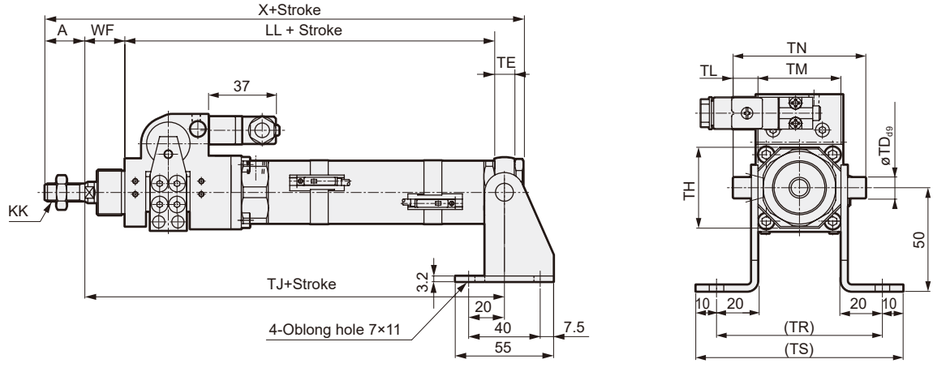
●Head Side Trunnion Type (TB)





[With bellows]

● Head side trunnion (TB) with bracket (option)



Code	Head Side Trunnion Type (TB) Mounting Dimensions															With Bellows		
Bore Size (mm)	A	KK	LL	WF	X	TD	TE	TH	TJ	TK	TL	TM	TN	TR	TS	b	d	ℓ
ø20	20	M8x1.0	124	24	182	8	9	29.5	152.5	9.5	8	30	46	70	90	32	30	(Stroke/3)+6
ø30	23	M10x1.25	139	23	201	10	11	39	167.5	10.5	12	40	64	80	100	38	46	(Stroke/3.25)+7
ø40	25	M12x1.5	148	23	212	10	11	44	176.5	10.5	9.5	53	72	93	113	40	46	(Stroke/3.25)+7

*1: Round up the ℓ dimension to the nearest whole number.

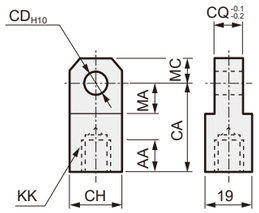
***2: For outline dimension drawings of accessories, please refer to P. 342.**

***3: For dimensions with each switch, refer to P. 360.**

JSM2 / JSM2-V Common Accessories Outline Dimension Drawing

● Single Knuckle (I)

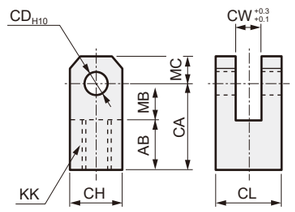
Material: Steel, Zinc Chromate



Model Number	Applicable Bore Size (mm)	AA	CA	CD	CH	CQ	KK	MA	MC	Weight (g)
M1-I-20	20	14	30	10	19	8	M8×1.0	13	10	60
M1-I-30	25, 30, 32	14	36	12	25	10	M10×1.25	16	12	106
M1-I-40	40	14	36	12	25	10	M12×1.5	16	12	100

●Double Knuckle (Y)

Material: Steel, Zinc Chromate

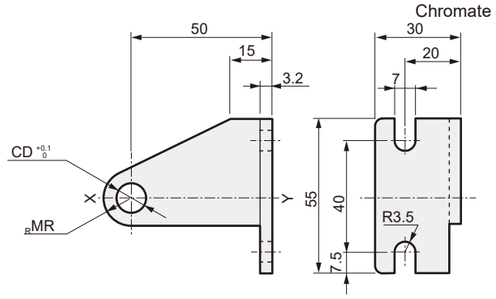


Model Number	Applicable Bore Size (mm)	AB	CA	CD	CH	CL	CW	KK	MB	MC	Weight (g)
M1-Y-20	20	17	30	10	19	19	8	M8×1.0	13	10	99
M1-Y-30	25, 30, 32	20	36	12	25	25	10	M10×1.25	16	12	197
M1-Y-40	40	20	36	12	25	25	10	M12×1.5	16	12	193

Note: Pin, washer, and cotter pin are attached.

●Double Bracket (B2)

Material: Steel, Zinc Chromate

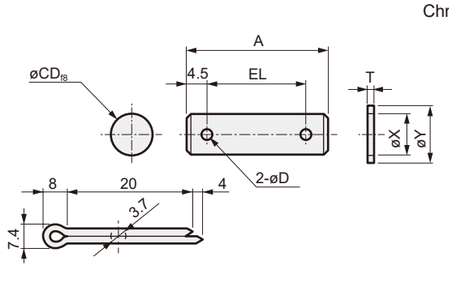


Model Number	Applicable Model	Applicable Bore Size (mm)	CD	MR	Weight (g)
M1-B2-20-CC	JSK2-CC	20/25	8	8	145
M1-B2-30-CC		32	10	11	163
M1-B2-40-CC		40	12	11	170
M1-B2-20-CA	JSK2-CA JSM2-CA	20	10	11	158
M1-B2-30-CA		25/32/40	12	11	162
M1-B2-20-TA	JSK2-TA/TB JSM2-TA/TB	20	8	8	132
M1-B2-30-TA		25, 32, 40	10	11	142

*1: A pair is symmetrical to the XY line.
*2: The above model number includes the Retaining Ring and pin. 2 pcs./ set. (However, not attached for trunnion type)
*3: Not included to mounting type TA with brake unit cover (U).

●Pin for Double Knuckle (P)

Material: Steel, Zinc Chromate

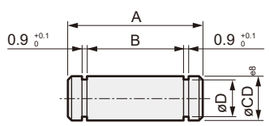


Model Number	Applicable Bore Size (mm)	A	D	CD	EL	T	X	Y	Weight (g)
M1-P-20	20	37	4	10	28	1.6	10.5	18	29
M1-P-30	25, 30, 32, 40	46	4	12	37	2.3	12.5	22	50

Note: Pin, washer, and cotter pin for double knuckle use are attached to the product.

●Pin for Double Bracket (P1) (P2)

Material: Steel Zinc Chromate

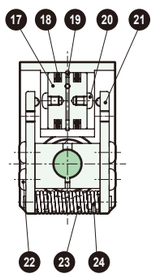


Model Number	Applicable Model and Applicable Bore Size (mm)	A	B	CD	D	Retaining Ring Used	Weight (g)
M1-P1-20	JSK2-CC-20/25	33	28	8	7	E-type 7	13
M1-P1-30	JSK2-CC-32	33	28	10	9	E-type 9	21
M1-P1-40	JSK2-CC-40	37	32	12	9	E-type 9	32
M1-P2-20	JSK2-CA-20 JSM2-CA-20	25	20	10	9	E-type 9	16
M1-P2-30	JSK2-CA-25/32/40 JSM2-CA-30/40	27	22	12	9	E-type 9	24

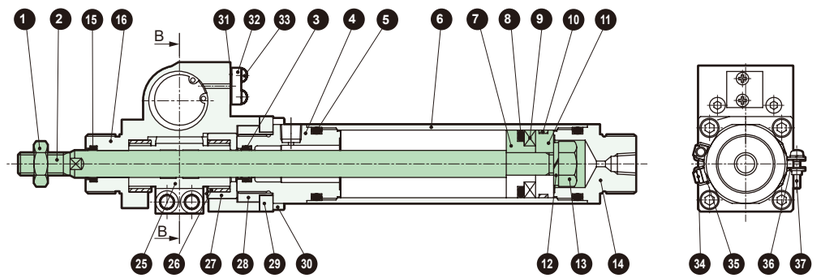
Note: Pin and Retaining Ring for bracket use are attached to the product. (However, not attached for trunnion type)

Internal Structure and Materials

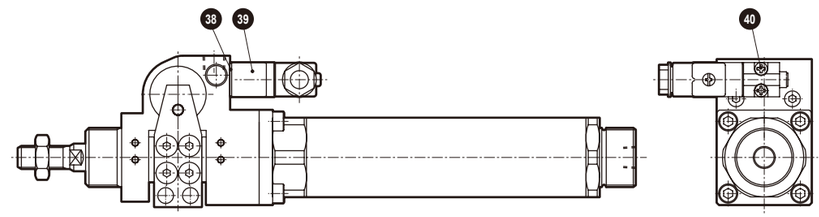
● JSM2



B-B, Cross-sectional drawing



● JSM2-V (with valve)



Do Not Disassemble

Part No.	Part Name	Material	Remarks
1	Rod Nut	Steel	Zinc Chromate
2	Piston Rod	ø20, ø30: Stainless Steel ø40: Carbon steel	Industrial Chrome Plating
3	Rod Packing	Nitrile Rubber	
4	Rod Cover	Aluminum Alloy	Chromate
5	Cylinder Gasket	Nitrile Rubber	
6	Cylinder Tube	Aluminum Alloy	Hard Anodized
7	Piston A	Aluminum Alloy	
8	Piston Packing	Nitrile Rubber	
9	Magnet	Plastic	
10	Wear Ring	Polyacetal	
11	Piston B	Aluminum Alloy	
12	Spring washer	Steel	Zinc Chromate
13	Hexagon Nut	Steel	Zinc Chromate
14	Head Cover	Aluminum Alloy	Chromate
15	Scraper	Nitrile Rubber	
16	Brake Body	Cast Iron	Nickel Plating
17	Brake Piston	Copper Alloy	
18	Piston Packing	Nitrile Rubber	
19	C-type Retaining Ring	Stainless Steel	
20	Pan Head Screw	Steel	Zinc Chromate
21	Lever	Steel	Zinc Chromate

Part No.	Part Name	Material	Remarks
22	Hexagon Socket Button Head Screw	Steel	Black Oxide
23	Brake Spring	Steel	
24	Hexagon Socket Head Cap Screw (ø20)	Steel	Black Oxide
	Guide pin (ø30, ø40)	Steel	Zinc Chromate
25	Brake Metal	Cast Iron	Nickel Plating
26	Bushing	Dry Bearing	
27	Ring	Steel	Black Oxide
28	Fixed Ring	Steel	Zinc Chromate
29	Square Flange	Steel	Zinc Chromate
30	Hexagon Socket Head Cap Screw	Steel	Black Oxide
31	Body Gasket	Cork	
32	Masking Plate	Copper Alloy	
33	Pan Head Screw	Steel	Zinc Chromate
With Switch			
34	Switch		
35	Band	Stainless Steel	
36	Switch Rail	Stainless Steel	
37	Pan Head Screw	Stainless Steel	
With Valve			
38	Body Gasket	Cork	
39	Brake Release Valve		P5136M0 (CKD)
40	Pan Head Screw	Steel	Zinc Chromate

Mounting Bracket Material

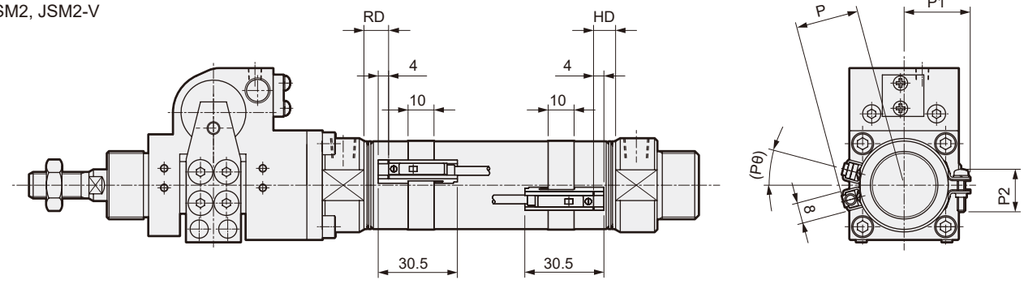
Mounting Type	Material	Remarks
Foot (LB)	Steel	Zinc Chromate
Flange (FA)	Steel	Zinc Chromate
Trunnion (TA / TB)	Steel	Zinc Chromate
Clevis (CA)	Steel	Zinc Chromate

Note: Mounting brackets are included with the product upon shipment. However, if bellows are included and mounting brackets are LB, FA, or TA, they will be shipped assembled.

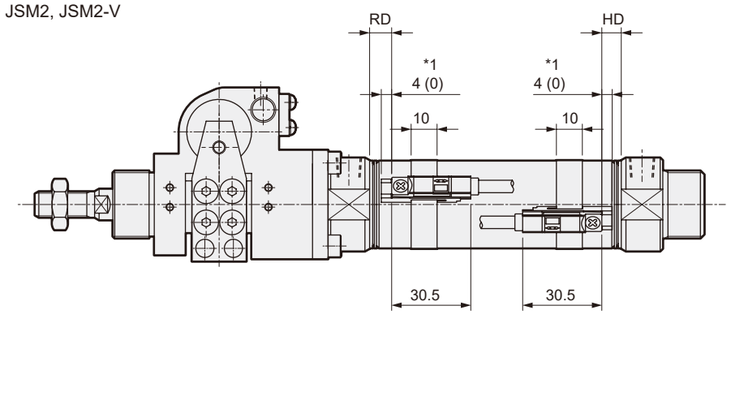
For maintenance parts, please visit the CKD Equipment Product Site (https: //www.ckd.co.jp/kiki/en/) → "model No." → Maintenance Parts.

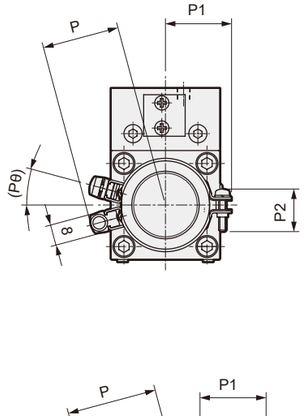
JSK2 / JSM2 Series Switch Equipped Outline Dimension Drawing

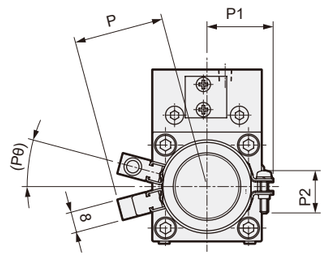
● T0H/V, T5H/V, T2H/V, T3H/V, T3PH/V, T2WH/V, T3WH/V, T2WLH/V
· JSK2, JSK2-V
· JSM2, JSM2-V



● T1H/V, T8H/V,T2JH/V
· JSK2, JSK2-V
· JSM2, JSM2-V







Code	JSK2, JSK2-V														
	P1	P2	Pθ	T0, T5, T2, T3, T3P, T2□R3			T2W, T3W, T2WL			T1, T2J			T8		
Bore Size (mm)				P	RD	HD	P	RD	HD	P	RD	HD	P	RD	HD
ø20	19.5	14	22	17.3	8	7	17.3	10	9	28.5	7	6	23.1	2	1
ø25	22	14	18	19.8	9.5	8.5	19.8	11.5	10.5	31	8.5	7.5	25.6	3.5	2.5
ø32	25.5	16	15	24.3	9.5	8.5	24.3	11.5	10.5	35.5	8.5	7.5	30.1	3.5	2.5
ø40	29.5	16	12	28.3	11.5	10.5	28.3	13.5	12.5	39.5	10.5	9.5	34.1	5.5	4.5

Code	JSM2, JSM2-V														
	P1	P2	Pθ	T0, T5, T2, T3, T3P, T2□R3			T2W, T3W, T2WL			T1, T2J			T8		
Bore Size (mm)				P	RD	HD	P	RD	HD	P	RD	HD	P	RD	HD
ø20	21	14	19	19.5	13	13	19.5	15	15	30.3	12	12	25.3	7	7
ø30	26	16	15	24.5	16	16	24.5	18	18	35.3	15	15	30.3	10	10
ø40	31	14	12	29.5	17	17	29.5	19	19	40.3	16	16	35.3	11	11

*1: For T1□, T2J□ switches and stroke 35 mm or more, the dimension will be ( ).
*2: For switch mountability, refer to the model number display method for each variation.

MEMO

*Related Equipment Selection Guide

Overrun amount and stopping accuracy vary depending on the valve used. Please use the related equipment below.

Model Name / Related Equipment Name / Bore Size (mm)	SOL-1	SOL-2	Reverse Regulator	Speed Controller	Silencer	Piping
JSM2 JSK2 ø20	4GB150R-06	3GA110R	R1100-6-W 2419-1C	SC3W-6-6 SC3R-6 SC1-6	SLW-6A	ø6 × ø4 Nylon Tubing
JSK2 ø25	4GB150R-06	3GA110R	R1100-6-W 2419-1C	SC3W-6-6 SC3R-6 SC1-6	SLW-6A	ø6 × ø4 Nylon Tubing
JSM2 ø30	4GB150R-06 4GA210R-06 4GB250R-06	3GA110R	R1100-6-W 2419-1C	SC3W-6-6 SC3R-3-6 SC1-6	SLW-6A	ø6 × ø4 Nylon Tubing
JSK2 ø32	4GB150R-06 4GA250R-06 4GB250R-06	B5136	R1100-6-W 2419-1C	SC3W-6-6 SC3R-3-6 SC1-6	SLW-6A	ø6 × ø4 Nylon Tubing
JSM2 JSK2 ø40	4GA250R-06 4GB250R-06	4GA110R-06 4GB110R-06	R1100-6-W 2419-1C	SC3W-6-8 SC3R-6 SC1-6	SLW-6A	ø8 × ø5.7 Nylon Tubing

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.

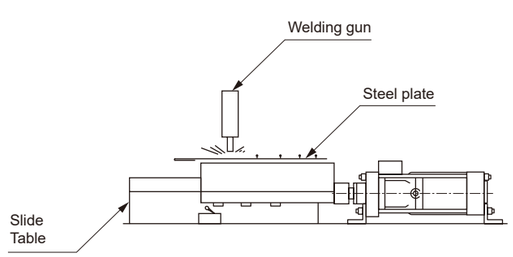
4 Work lock

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

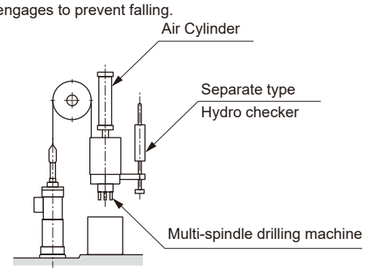
1 Linear multipoint welding

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



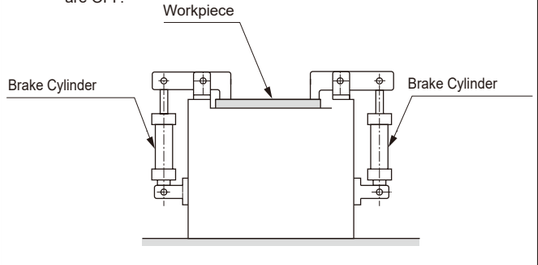
2 Fall prevention

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.



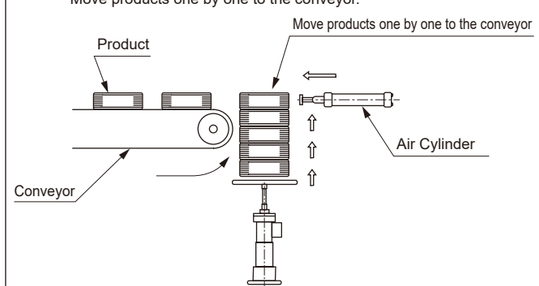
3 Work lock

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



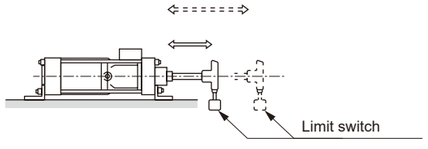
4 Move to conveyor

Move products one by one to the conveyor.



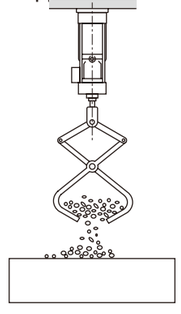
5 Cylinders with different strokes When it is necessary to have many

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.



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.



Custom-made

■Without Bellows (-XJ9)

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

Model No. Notation

JSK2 - 00 - 40 - 100 - XJ9

JSM2 - 00 - 40 - 100 - XJ9

Model No.

Please refer to the JSK2/JSM2 model number display method.

Dimensional Drawings

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

■With 2 Rod Nuts (-A2)

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

Model No. Notation

JSK2 - 00 - 40 - 100 - A2

JSM2 - 00 - 40 - 100 - A2

Model No.

Please refer to the JSK2/JSM2 model number display method.

Dimensions

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

MEMO

With Brake / With Lock
ULK□
JSK2/ JSM2
JSG
JSC3, JSC4
USSD
UFCD
USC
Cylinder Switch
Ending

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 cylinder JSK2/JSM2 Series

Design / Selection

1. Common

Warning

■ Structure so that the human body does not directly touch 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 balanced circuit that accommodates the protrusion of the Piston Rod.

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 a case, there is a risk of causing injury to the human body such as pinching hands and feet, and causing damage to the machine, so use a balance circuit like the recommended pneumatic circuit to prevent shooting out.

■ Please note that holding force is the ability to hold a static load without vibration or shock after the brake is activated under no load.

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

■ Do not apply impact load, strong vibration, or rotational force when the brake is operating.

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 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.

- Place the limit switch in front of the desired stop position by the overrun amount.
- The limit switch requires a detection length (dog length) of the overrun amount + α.
- In the case of our cylinder switch, the operating range 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.

■ In order to improve stopping accuracy, ensure that the brake stops the cylinder as soon as possible after receiving the stop signal.

To do so, use a DC type control electric circuit and valve with good response, and place 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 fluctuation or disturbance during the reciprocating stroke of the cylinder, the dispersion of the stop position will increase, so consider keeping the piston speed constant immediately before the stop position. Also, during the cushion stroke and while in the acceleration range from the start of operation, the speed change is large, so the dispersion of the stop position becomes 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, please refer to the P. on stopping accuracy and overrun.

■ 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.

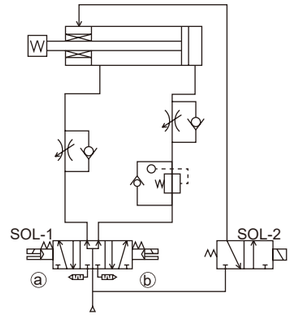
■ Basic circuit

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.

- 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

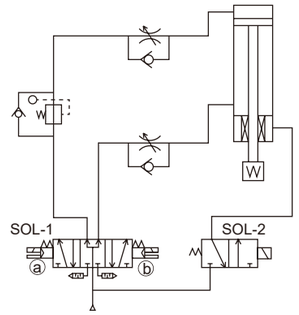


ⓐ SOL-1 ⓑ		SOL-2	Operating State
OFF	OFF	OFF	Stop
ON	OFF	ON	Retract
OFF	ON	ON	Advance

- For 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

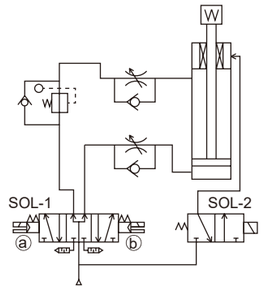


ⓐ SOL-1 ⓑ		SOL-2	Operating State
OFF	OFF	OFF	Stop
ON	OFF	ON	Descend
OFF	ON	ON	Ascend

- For 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



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

Warning

■ Drain

If the piping capacity is large relative to the cylinder volume for brake release, compressed air may not be completely exhausted when the solenoid valve switches, and water droplets condensed by adiabatic expansion may accumulate and become drain. Drain can wash away lubricating oil, causing poor lubrication, momentarily blocking flow paths, corroding the brake internals, etc., leading to brake malfunction and potentially causing problems such as poor stopping accuracy, brake failure, or failure to release.

To prevent drain generation, based on the ratio A of piping volume to cylinder volume, install a dryer and adjust the air quality so that the atmospheric pressure dew point of the compressed air used is as shown below. Alternatively, adjust the Bore Size and length so that the piping volume from the release port to the solenoid valve meets the conditions below, according to the atmospheric pressure dew point of the compressed air used.

Magnification A <1: Atmospheric dew point -20°C or less
1 ≤ Ratio A < 2: Atmospheric pressure dew point -25°C or less
Magnification A≥2 : Atmospheric dew point -30°C or less

Calculation of Ratio A of Piping Volume to Cylinder Volume

$$A = \frac{V_t + V_1}{V_0\,(10P+1)}$$

V_t: Piping volume (mm³)
V_0: Brake release cylinder volume (mm³)
V_1: Brake release cylinder blank volume (mm³)
P: Operating Pressure (MPa)

	V_0 (mm³)	V_1 (mm³)
JSK2-20 JSM2-20	754	754
JSK2-25 JSK2-32 JSM2-30	1963	1865
JSK2-40 JSM2-40	4021	3860

Example) JSK2-20, Piping to the brake release port, Bore Size ø4/length 1.5 m Operating Pressure 0.5 MPa
Piping volume V_t = cross-sectional area × length = $4 \times 4 \times \pi/4 \times 1500 \approx 18850$ mm³

$$A = \frac{18850+754}{754\times(10\times0.5+1)} = 4.3$$

Therefore, adjust the air quality so that the atmospheric pressure dew point is -30°C or less.

- If adjustments are difficult, consider using a cylinder with valve (JSK2-V, JSM2-V).

■ When releasing the brake, make sure to release the brake earlier than the cylinder operation. If the cylinder operation is faster, the brake may not release.

■ If back pressure is applied to the locking mechanism, the brakes may be released. Use a discrete valve, or use a check valve on the side with an individual exhaust manifold.

■ Use a 3-position P/A/B connection (pressurization on both sides) solenoid valve for the cylinder drive to prevent the piston from popping out when starting.

■ To maintain balance of the thrust, including the load, the side with the larger thrust should have a Regulators with a check valve.

CAUTION

■ Precautions Regarding Stopping Accuracy

- Stop 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
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 by referring to the JSK2-V, JSM2-V brake valve electrical specifications. Also, connect the valve directly to the brake port to improve stopping accuracy.

● When using a PLC (programmable 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 change the load weight significantly when the brake is stopped. The stop position may change.

■ For mounting type TA, the brake unit cover and double yoke bracket interfere, so they cannot be selected simultaneously.

■ Although the contact service life of the reed switch varies depending on usage conditions, it will generally last several million cycles. If the equipment used operates continuously day and night or at high frequency, the contact life region will be reached in a short period, so use solid state switches without contact parts.

During Use

⚠Warning

■ Release brakes before coupling the load to the end of the rod. If performed with the brake activated, a load exceeding the rotational force or holding force will act on the Piston Rod, causing damage to the brake mechanism.

■ If the brake is released while air is applied to only one side of the cylinder, the Piston Rod can pop out at high speed, creating a dangerous situation. When releasing the brake during adjustment work, etc., always observe the following:
● Check that no one is in the movable range of the load and that no problems will arise if the load moves when brakes are released.
● When releasing the brake, perform position locking or take other measures:
· Placing the load at the lower end
· Pressurizing both sides
· Placing a support
Implement fall prevention measures such as these.
● Confirm that air is not pressurized on only one side of the cylinder when releasing brakes.

■ Brakes are released manually or by pressurizing the brake release port. 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.

■ Do not apply torque to the rod when braking, as the holding force will decrease, creating hazardous conditions. Also, use with a mechanism that prevents rod rotation.

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

■ With the JSM2 Series, the brakes can be manually released by screwing a Hexagon Socket head cap bolt into the brake release female thread on the side or top of the brakes. However, the brakes may be damaged if the bolt is screwed in too far; use the bolts attached with the product, or if using commercially available bolts, use the appropriate screw insertion depth for the release bolt shown in the table below.

I.D.	Bolt Rotation Count
ø20	8 to 9 rotations
ø25	11 to 12 rotations
ø30	
ø32	
ø40	14 to 15 rotations

ø20 to ø40 : Use bolt M5x15 or longer

■ If there is any play, such as looseness, in the brake signal dog, stopping accuracy is affected. Securely fix to eliminate play, etc.

■ If the piston speed is fast, the detection dog must be long enough to match relay response time. Note that if the dog length is short, the stop signal will not be output and it will not stop.

⚠CAUTION

■ Adjust the air balance in 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 the detection part such as the cylinder switch.
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 fluctuation during the reciprocating stroke of the cylinder causes changes in piston speed, and changes in piston speed increase the dispersion of 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 range from the start of operation, the speed change is large, so the dispersion of the stop position becomes large. For this reason, when performing step operation with a short stroke from the start of operation to the next position, stopping accuracy may worsen, so please be careful.

■ Load to Piston Rod
More strictly than in the case of general pneumatic cylinders, use with the load on the Piston Rod always applied axially. Furthermore, when moving the load, regulate it sufficiently with a guide so that there is no backlash or twisting.

■ Maintaining the rod sliding parts
Be careful not to scratch or dent the Piston Rod sliding part. It causes damage to packings, leading to leakage or brake failure.

■ Downward) when shipped to prevent damage. Change to the orientation to be used when wiring the terminal box.

1. Common

⚠Warning

■ The brake section can be removed from the Cylinder Body. Do not disassemble or inspect brakes or hazards may result when brakes are used again.

■ The required amount of grease is applied to the brake part, so avoid applying more grease and do not wipe off the grease.

■ The required grease is applied when brakes are replaced, so there is no need to apply grease to rods.

■ Please always use with the dust cover attached except during manual release, as it may cause a malfunction.

⚠CAUTION

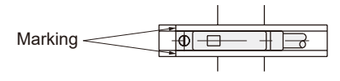
■ Air supply pipes that are too narrow or too long can reduce stopping accuracy.

■ If the cylinder has been stopped for a long time, such as first thing in the morning or afternoon, the frictional resistance increases and the piston speed changes, so the stopping accuracy may deteriorate. Perform a break-in operation to obtain stable stopping accuracy.

2. Common (With T-type Switch)

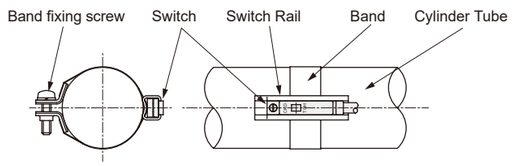
⚠CAUTION

■ When Moving the Switch Position in the Stroke Direction
● The 1-color indicator switch can be finely adjusted by about ±3 mm from the mounting position at the time of shipment. If the adjustment range exceeds ±3 mm, or if fine-tuning the position of a 2-color indicator switch, move the band position.
● Loosen the switch mounting screw, move the switch along the rail, and tighten at the specified position. For T2, T3, T0, T5, use a flat-head screwdriver (watchmaker's screwdriver, precision screwdriver, etc.) with a grip diameter of 5 to 6 mm, tip shape width of 2.4 mm or less, and thickness of 0.3 mm or less to tighten the switch fixing screw with a tightening torque of 0.1 to 0.2 N·m. For T□C, T1, T2J, T2Y, T3Y, T8, tighten with a tightening torque of 0.5 to 0.7 N·m.
● The switch rail has a marking 4 mm from the end face of the rail. Use it as a guide for mounting position when replacing the switch. The switch rail marking is set to the switch maximum sensitivity position at factory shipment. If the switch type changes or the band is moved, the maximum sensitivity position changes, so adjust the position each time.



■ When Moving the Switch Position in the Circumferential Direction
● Loosen the band fixing screw, move the switch rail circumferentially, and tighten it at the specified position. The tightening torque is 0.6 to 0.8 N·m.

■ When Moving the Band Position
● Loosen the band fixing screw, move the switch rail and band along the cylinder tube, and tighten them at the specified position. The tightening torque is 0.6 to 0.8 N·m.



For precautions during installation, adjustment, use, and maintenance, please refer to "During Use" in this catalog and the Instruction Manual on the CKD Component Product Site (https://www.ckd.co.jp/kiki/en/) -> "Model Number".