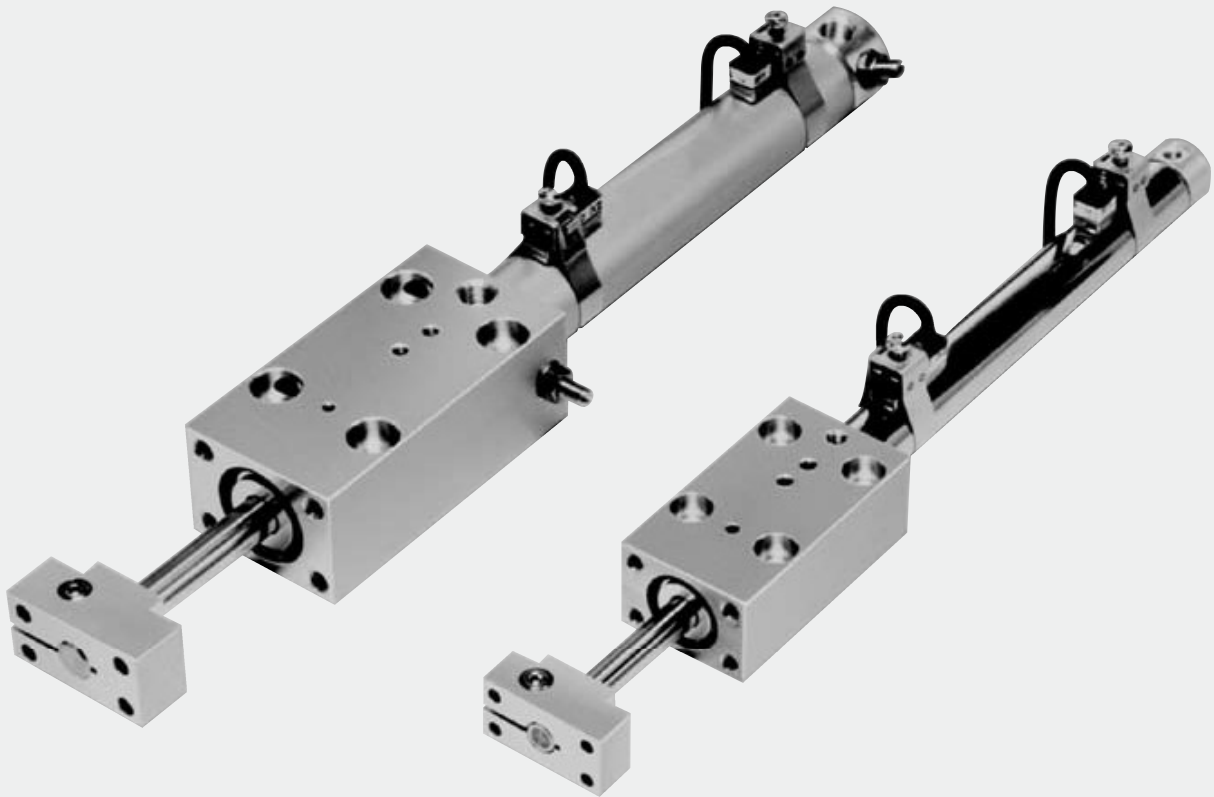


F CYLINDER Double Bearing Type

JKXB Series

Registration of Utility Model



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F CYLINDER Double Bearing Type

JKXB Series

Double Bearing Can Provide Almost 4 Times The Rigidity.

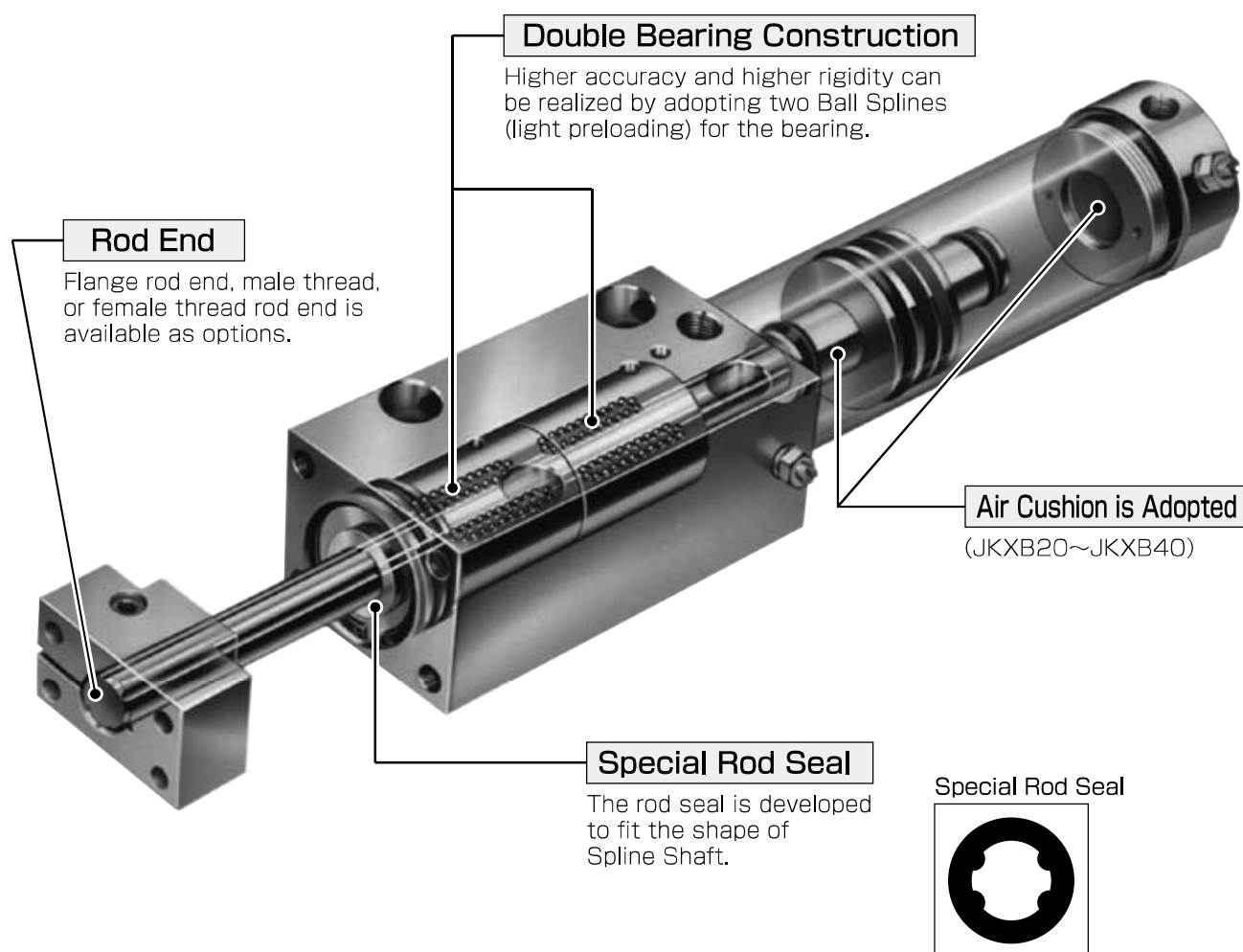
Ball Spline



High-accuracy Ball Spline is adopted.

JKXB

F CYLINDER Double Bearing Type

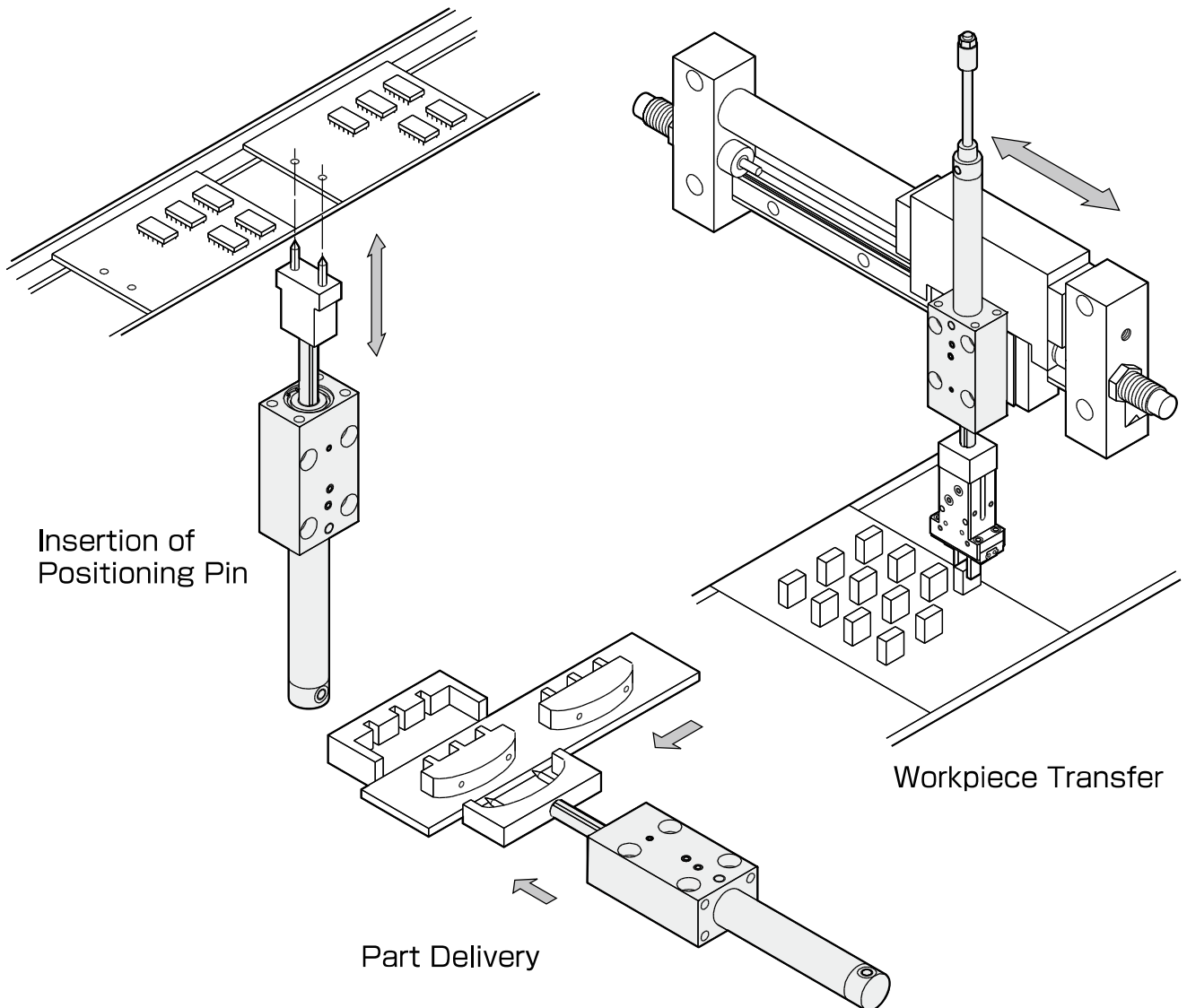


Summary of The F CYLINDER Double Bearing Type

The double bearing type F cylinder is newly added to the JKX series equipped with the high accuracy ball splines driven directly by a piston.

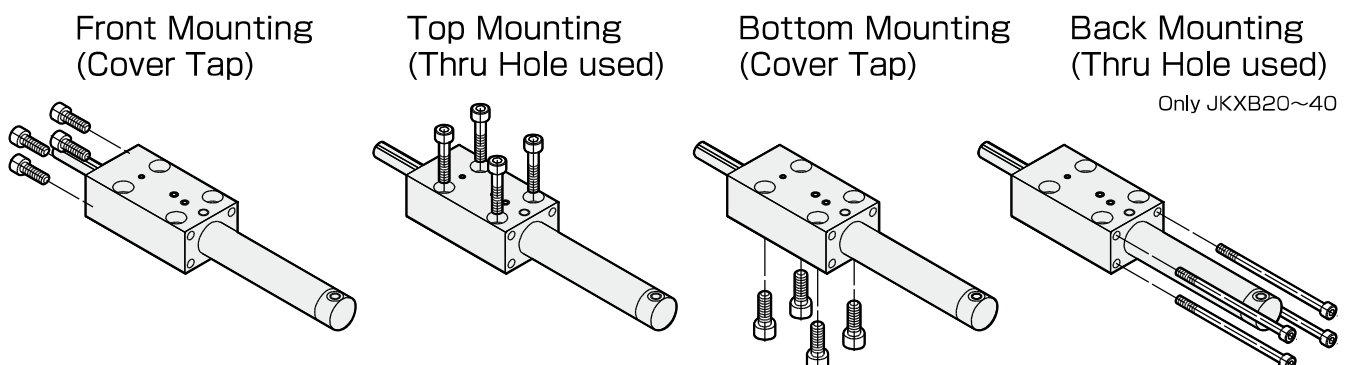
By placing two bearings (ball spline) in series, high accuracy and high rigidity cylinders can be realized despite long stroke and heavy load.

Application Examples : F CYLINDER Double Bearing Type



MAIN BODY INSTALLATION

(Bolt as shown in the figure are not supplied with products)



Model Code Example

JKXBS-SD32-100-ZTZES-RP12LA

● **Series Name**

● **Double Bearing**

● **Magnet**

No Code	None
S	with Magnet

A magnet is required when mounting switches.

● **Stroke**

Standard Stroke
Page 940

● **Support system**

SD	Standard
----	----------

● **Bore Size**

12	φ12
16	φ16
20	φ20
25	φ25
32	φ32
40	φ40

● **Cable Length**

No Code	1.5m
LA	5m

● **Number of Switches**

1	1
2	2

● **Switch**

No Code	None
RP1	AC100V/DC24V(with contact)
RP4	DC10~30V(without contact)
RP5	AC100V/DC24V(with contact-without indicator light)

For details Page 1070, 1071

Maximum Stroke

Bore Size	Maximum Stroke
φ12	100
φ16	100
φ20	550
φ25	650
φ32	650
φ40	700

Minimum Stroke

Bore Size	JKXB	JKXBS
φ12	14	10
φ16	10	10

As to the orders for shorter strokes than the above, please contact us separately.

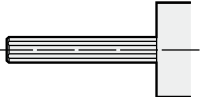
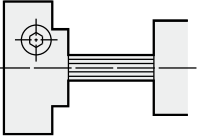

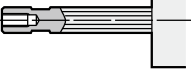
Switch Mountable Minimum Stroke Unit: mm

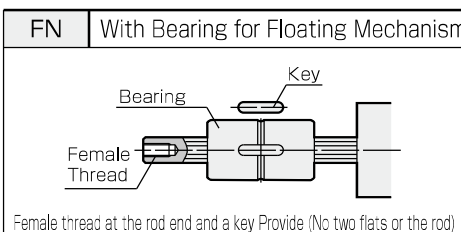
Switch Mounting Detail	Stroke
With one piece	10
With two pieces	On a straight line 30 Not on a straight line 15
With three pieces	On a straight line 50 Not on a straight line 40

Stroke Adjuster

No Code	Without Stroke Adjuster	ZES	With Push Stroke Adjuster
		JKXB12, 16 Adjustment: 5mm	Push Stroke Adjuster
ZES, ZEL	With Push Stroke Adjuster	ZFS, ZFL	With Pull Stroke Adjuster
JKXB20~40 ZES...Adjustment: 25mm ZEL...Adjustment: 50mm	Push Stroke Adjuster	JKXB20~40 ZFS...Adjustment: 25mm ZFL...Adjustment: 50mm	Pull Stroke Adjuster

Rod End Shape

No Code	Standard	ZT	With Flange Rod End
			
WT	Male Thread Rod End	WS	Female Thread Rod End
			



Two Flats will be any position on the rod circumference.

SPECIFICATIONS






Bore Size(mm)	φ12	φ16	φ20	φ25	φ32	φ40
Rod Size(mm)	φ6	φ8	φ10	φ13	φ13	φ16
Maximum Stroke(mm)	100	100	550	650	650	700
Piping Size	M5×0.8		Rc1/8			Rc1/4
Guide Mechanism	Ball Spline					
Type of Operation	Double acting					
Fluid	Air					
Maximum Operating Pressure	0.7MPa		1.0MPa			
Minimum Operating Pressure	0.13MPa		0.1MPa			
Minimum Operating Pressure (in case of optional ZES and ZEL)	0.18MPa					
Proof Pressure	1.05MPa		1.5MPa			
Operating Temperature	5~60℃					
Maximum Operating Speed	100~700mm/s					
Lubrication	Not required					
Cushioning	Rubber Cushion		Air Cushion			

GUIDE TYPE(BALL SPLINE)

Model	Type
JKXB12	THK LT6×2
JKXB16	THK LT8×2
JKXB20	THK LT10×2
JKXB25	THK LT13×2
JKXB32	THK LT13×2
JKXB40	THK LT16×2

Pre-load:Zero or slightly pre-loaded

OPTIONAL PARTS CODES

Name	Switch with Contact	Switch without Contact	Switch with Contact (without Indicator Light)	Switch Mounting Fixture
<div>PARTS CODE</div> <div>Note</div> <div>PARTS CODE</div> <div>Note</div> <div>Content</div>	<div>RP1(JKX□)</div> <div>Cable Length:1.5m</div> <div>RP1LA(JKX□)</div> <div>Cable Length:5m</div>  <div>with fixture</div>	<div>RP4(JKX□)</div> <div>Cable Length:1.5m</div> <div>RP4LA(JKX□)</div> <div>Cable Length:5m</div>  <div>with fixture</div>	<div>RP5(JKX□)</div> <div>Cable Length:1.5m</div> <div>RP5LA(JKX□)</div> <div>Cable Length:5m</div>  <div>with fixture</div>	<div>BD(JKX□)</div> <div>Fill in □ as bore size.</div> 
	Flange Rod End	Repair Parts Kit Standard	Push Stroke Adjuster Type	Pull Stroke Adjuster Type
	<div>ZT(JKX□)</div> <div>Fill in □ as bore size.</div> 	<div>HQ(JKX□)</div> <div>For four (six) groove spline</div> <div>Fill in □ as bore size.</div> <div>For details</div> <div>☞ Page 911</div>	<div>HQ(JKX□ZE)</div> <div>For four (six) groove spline</div> <div>Fill in □ as bore size.</div> <div>For details</div> <div>☞ Page 912</div>	<div>HQ(JKX□ZF)</div> <div>For four (six) groove spline</div> <div>Fill in □ as bore size.</div> <div>For details</div> <div>☞ Page 913</div>

※Currently, the number of rod spline grooves has changed from 3 to 4 for all models other than JKX40, which has 6 grooves.

MASS

●Standard Type

Unit: g

Model	Standard Mass	Additional Mass
JKXB12	185	0.4
JKXB16	226	0.7
JKXB20	465	1.1
JKXB25	665	1.5
JKXB32	745	1.8
JKXB40	1500	2.5

METHOD TO CALCULATE THE MASS

Ex. JKXBS-SD20-100-ZTZES-RP12

Standard Mass..... 610g

Additional Mass..... $1.8 \times 100 = 180$ g

Flange Rod End..... 30g

Switch..... $35 \times 2 = 70$ g

$610 + 180 + 30 + 70 = 890$ g

●Push Stroke Adjuster Type (ZES, ZEL) Unit: g

Model	Standard Mass		Additional Mass
	ZES	ZEL	
JKXB12	206	—	0.5
JKXB16	242	—	0.9
JKXB20	610	665	1.8
JKXB25	835	915	2.4
JKXB32	935	1015	2.7
JKXB40	2030	2130	4.1

●Pull Stroke Adjuster Type (ZFS, ZFL) Unit: g

Model	Standard Mass		Additional Mass
	ZFS	ZFL	
JKXB12	—	—	—
JKXB16	—	—	—
JKXB20	510	520	1.1
JKXB25	715	725	1.5
JKXB32	800	810	1.8
JKXB40	1810	1830	2.5

●Options

Unit: g

Model	With Bearing for Floating Mechanism (FN)	Flange Rod End (ZT)
JKXB12	24	15
JKXB16	30	17
JKXB20	72	30
JKXB25	92	50
JKXB32	92	50
JKXB40	250	85

●Switch

Unit: g

Switch Type	Mass
RP1, RP4, RP5	35
RP1LA, RP4LA, RP5LA	70

Mass of switch fixture is included.

THEORETICAL THRUST

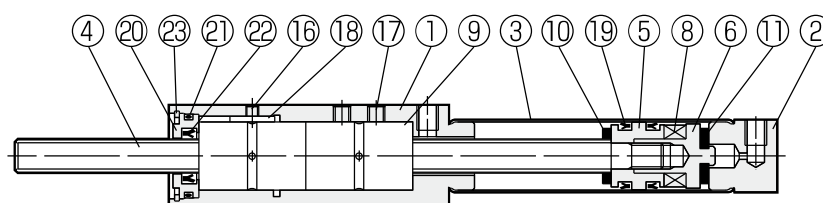
Unit: N

Bore Size (mm)	Working Direction	Operating Pressure MPa								
		0.2	0.3	0.4	0.5	0.6	0.7	0.8	0.9	1.0
φ12	Push	23	34	45	57	68	79	—	—	—
	Pull	17	26	34	43	51	60	—	—	—
φ16	Push	40	60	80	100	120	140	—	—	—
	Pull	30	45	60	76	91	106	—	—	—
φ20	Push	63	94	130	160	190	220	250	280	310
	Pull	47	71	94	120	140	170	190	210	240
φ25	Push	98	150	200	250	300	340	390	440	490
	Pull	72	110	140	180	220	250	290	320	360
φ32	Push	160	240	320	400	480	560	640	720	800
	Pull	130	200	270	340	400	470	540	600	670
φ40	Push	250	380	500	630	750	880	1000	1100	1300
	Pull	210	320	420	530	630	740	840	950	1100

1MPa=10.2kgf/cm²
1N= 0.102kgf

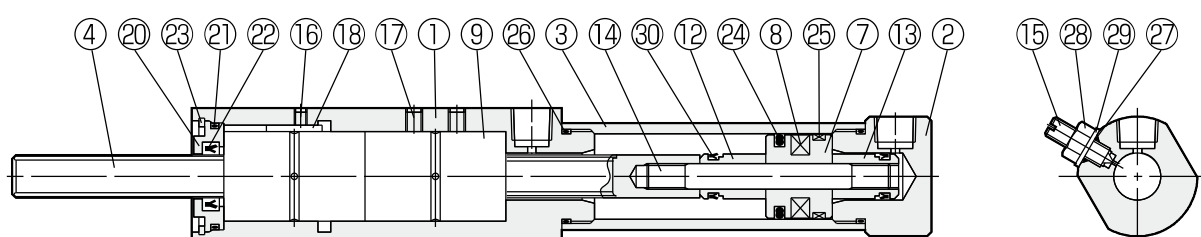
STRUCTURE AND PRINCIPAL COMPONENTS

JKXB12, 16 Standard



Disassembling is impossible.
(The rod seal can be replaced.)

JKXB20, 25, 32, 40 Standard



PRINCIPAL COMPONENTS

No.	Name	Material	Remarks	No.	Name	Material	Remarks
1	Rod Cover	Aluminum Alloy	Alumite Treatment	10	Front Cushion Rubber	Urethane Rubber	JKXB12, 16
2	Head Cover	Aluminum Alloy	Alumite Treatment	11	Rear Cushion Rubber	Urethane Rubber	JKXB12, 16
3	Tube	Stainless Steel	JKX12, 16	12	Front Cushion Rubber	Aluminum Alloy	JKXB20~40
		Aluminum Alloy	JKX20~40	13	Rear Cushion Rubber	Aluminum Alloy	JKXB20~40
4	Spline Rod	High Carbon Chrome Bearing Steel	Hard Chromium Plated	14	Piston Shaft	Stainless Steel	JKXB20~40
5	Piston A	Phosphor Bronze	JKXB12, 16	15	Needle	Steel	Nickel Plating
6	Piston B	Brass	JKXBS12, 16	16	Fixing Screw	Steel	Nickel Plating
7	Piston	Aluminum Alloy	JKXB20~40	17	Fixing Screw	Steel	Nickel Plating
8	Magnet	Resin Bound Magnet	Only with Magnet	18	Key	Steel	
9	Ball Spline	Steel, Resin,etc		19	Piston seal	NBR	JKXB12, 16

REPAIR PARTS

JKXB12, 16

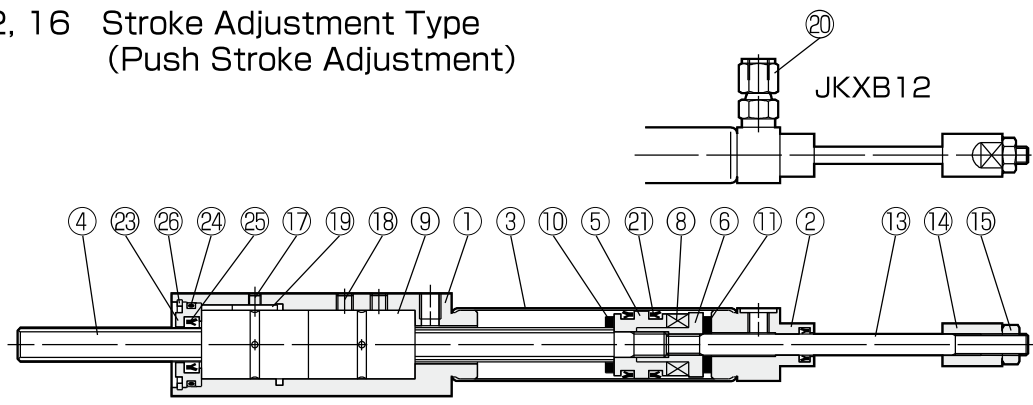
No.	Name	Material	Qty	Remarks
20	Rod Seal Holder	Aluminum Alloy	1	Alumite Treatment
21	O-ring	NBR	1	
22	Spline Seal	Urethane Rubber	1	
23	Circlip	Steel	1	Nickel Plating

JKXB20, 25, 32, 40

No.	Name	Material	Qty	Remarks
20	Rod Seal Holder	Aluminum Alloy	1	Alumite Treatment
21	O-ring	NBR	1	
22	Spline Seal	Urethane Rubber	1	
23	Circlip	Steel	1	Nickel Plating
24	Piston Seal	NBR	1	
25	Wear Ring	Synthetic Resin	1	
26	O-ring	NBR	2	
27	O-ring	NBR	2	
28	Nut	Steel	2	Nickel Plating
29	Plain Washer	Steel	2	Nickel Plating
30	Cushion Seal	NBR	2	

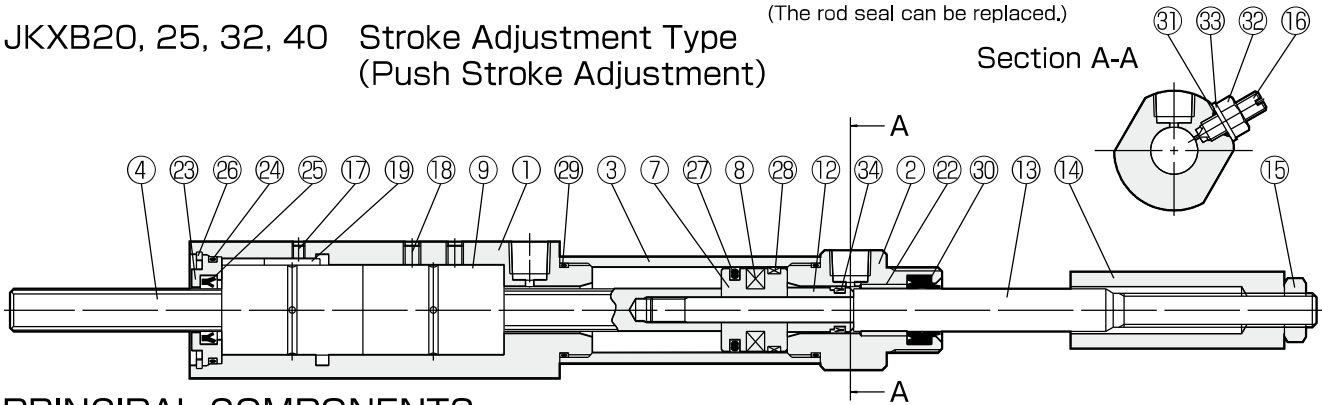
STRUCTURE AND PRINCIPAL COMPONENTS

JKXB12, 16 Stroke Adjustment Type
(Push Stroke Adjustment)



Disassembling is impossible.
(The rod seal can be replaced.)

JKXB20, 25, 32, 40 Stroke Adjustment Type
(Push Stroke Adjustment)



PRINCIPAL COMPONENTS

No.	Name	Material	Remarks	No.	Name	Material	Remarks
1	Rod Cover	Aluminum Alloy	Alumite Treatment	12	Cushion Collar	Aluminum Alloy	JKXB20~40
2	Head Cover	Aluminum Alloy		13	Push Stroke Adjustment Rod	Stainless Steel	Hard Chromium Plated
3	Tube	Stainless Steel	JKXB12, 16	14	Stopper for Stroke Adjustment	Carbon Steel	Hard Chromium Plated
		Aluminum Alloy	JKXB20~40			Steel	Nickel Plating
4	Spline Rod	High Carbon Chrome Bearing Steel	Hard Chromium Plated	15	Nut	Steel	Nickel Plating
5	Piston A	Phosphor Bronze	JKXB12, 16	16	Needle	Steel	Nickel Plating
6	Piston B	Brass	JKXBS12, 16	17	Fixing Bolt	Steel	Nickel Plating
7	Piston	Aluminum Alloy	JKXB20~40	18	Fixing Bolt	Steel	Nickel Plating
8	Magnet	Resin Bound Magnet	Only with Magnet	19	Key	Steel	
9	Ball Spline	Steel, Resin,etc		20	Universal Joints	Copper Alloy	Nickel Plating
10	Front Cushion Rubber	Urethane Rubber	JKXB12, 16	21	Piston seal	NBR	JKXB12, 16
11	Rear Cushion Rubber	Urethane Rubber	JKXB12, 16	22	Bush	Steel, PTFE	JKXB20~40

REPAIR PARTS

JKXB12, 16

No.	Name	Material	Qty	Remarks
23	Rod Seal Holder	Aluminum Alloy	1	Alumite Treatment
24	O-ring	NBR	1	
25	Spline Seal	Urethane Rubber	1	
26	Circlip	Steel	1	Nickel Plating

JKXB20, 25, 32, 40

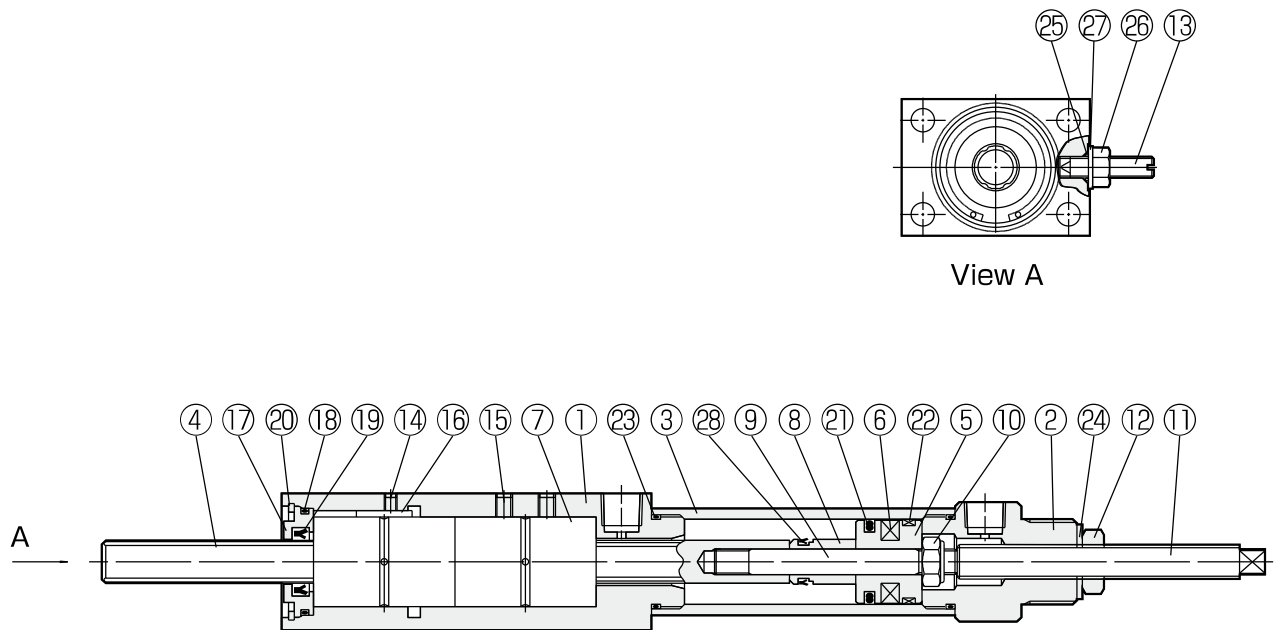
No.	Name	Material	Qty	Remarks
23	Rod Seal Holder	Aluminum Alloy	1	Alumite Treatment
24	O-ring	NBR	1	
25	Spline Seal	Urethane Rubber	1	
26	Circlip	Steel	1	Nickel Plating
27	Piston Seal	NBR	1	
28	Wear Ring	Synthetic Resin	1	
29	O-ring	NBR	2	
30	Rod Seal	NBR	1	
31	O-ring	NBR	1	
32	Nut	Steel	1	Nickel Plating
33	Plain Washer	Steel	1	Nickel Plating
34	Cushion Seal	NBR	1	

F CYLINDER Double Bearing Type

JKXB

STRUCTURE AND PRINCIPAL COMPONENTS

JKXB20, 25, 32, 40 Stroke Adjustment Type(Pull Stroke Adjustment)



PRINCIPAL COMPONENTS

No.	Name	Material	Remarks	No.	Name	Material	Remarks
1	Rod Cover	Aluminum Alloy	Alumite Treatment	9	Piston Shaft	Stainless Steel	
2	Head Cover	Aluminum Alloy	Alumite Treatment	10	U-nut	Steel	Nickel Plating
3	Tube	Aluminum Alloy	Hard Alumite	11	Pull Stroke Adjustment Rod	Steel	Nickel Plating
4	Spline Rod	High Carbon Chrome Bearing Steel	Hard Chromium Plated	12	Nut	Steel	Nickel Plating
5	Piston	Aluminum Alloy		13	Needle	Steel	Nickel Plating
6	Magnet	Resin Bound Magnet	Only with Magnet	14	Fixing Bolt	Steel	Nickel Plating
7	Ball Spline			15	Fixing Bolt	Steel	Nickel Plating
8	Cushion Collar	Aluminum Alloy		16	Key	Steel	

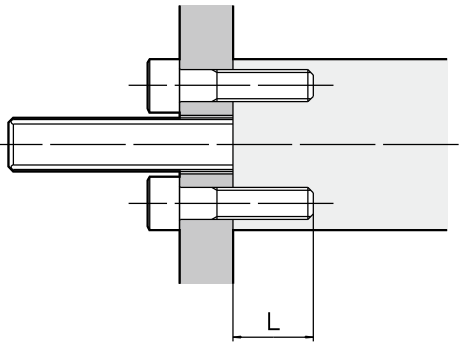
REPAIR PARTS

JKXB20, 25, 32, 40

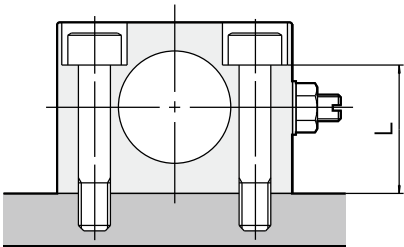
No.	Name	Material	Qty	Remarks
17	Rod Seal Holder	Aluminum Alloy	1	Alumite Treatment
18	O-ring	NBR	1	
19	Spline Seal	Urethane Rubber	1	
20	Circlip	Steel	1	Nickel Plating
21	Piston Seal	NBR	1	
22	Wear Ring	Synthetic Resin	1	
23	O-ring	NBR	2	
24	Seal Washer	NBR, Steel	1	
25	O-ring	NBR	1	
26	Nut	Steel	1	Nickel Plating
27	Plain Washer	Steel	1	Nickel Plating
28	Cushion Seal	NBR	1	

BODY INSTALLATION

Front mounting(Cover Tap)



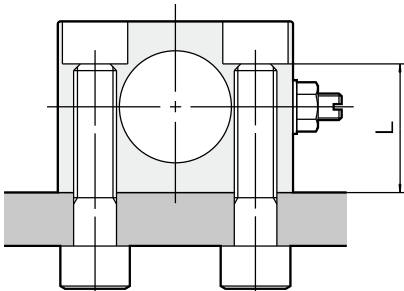
Top mounting(Thru Hole used)



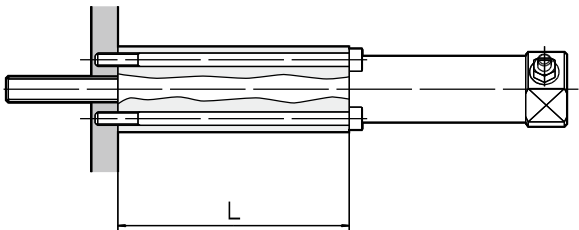
Model	Bolt Size	Screw Depth L(mm)	Fastening Torque N·m
JKXB12	M5×0.8	9	5.1
JKXB16	M5×0.8	9	5.1
JKXB20	M6×1	12	8.6
JKXB25	M8×1.25	16	22
JKXB32	M8×1.25	16	22
JKXB40	M10×1.5	20	43

Model	Bolt Size	Thru Hole Length L(mm)	Fastening Torque N·m
JKXB12	M5	15.9	5.1
JKXB16	M5	17.9	5.1
JKXB20	M6	24	8.6
JKXB25	M8	26	22
JKXB32	M8	29	22
JKXB40	M10	39	43

Bottom mounting(Cover Tap)



Back mounting(Thru Hole used)



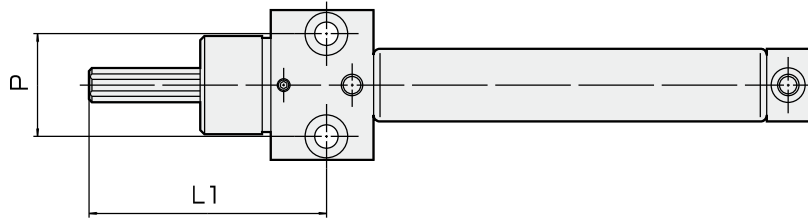
Model	Bolt Size	Screw Depth L(mm)	Fastening Torque N·m
JKXB12	M6×1	15.9	8.6
JKXB16	M6×1	17.9	8.6
JKXB20	M8×1.25	24	22
JKXB25	M10×1.5	26	43
JKXB32	M10×1.5	29	43
JKXB40	M12×1.75	39	75

Model	Bolt Size	Thru Hole Length L(mm)	Fastening Torque N·m
JKXB12	—	—	—
JKXB16	—	—	—
JKXB20	M5	86.5	5.1
JKXB25	M6	93	8.6
JKXB32	M6	93	8.6
JKXB40	M8	127	22

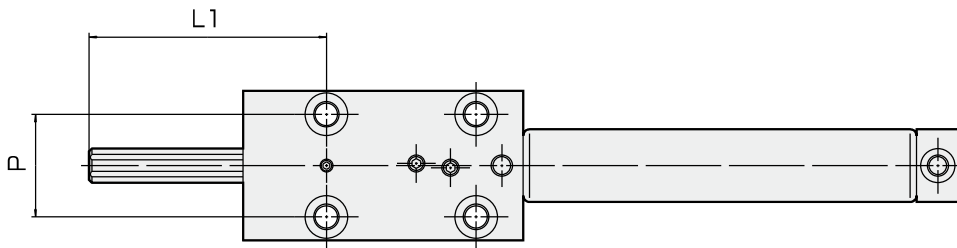
MOUNTING INTERCHANGEABILITY WITH JKX CYLINDER (SINGLE BEARING TYPE) —

All the products are the same as JKX for the dimension from the rod end to the rod mounting hole on the rod cover (mark L1 in the figure) and the mounting hole pitch (mark P in the figure). Here, the dimension from the mounting hole to the head cover end is different.

JKX Series

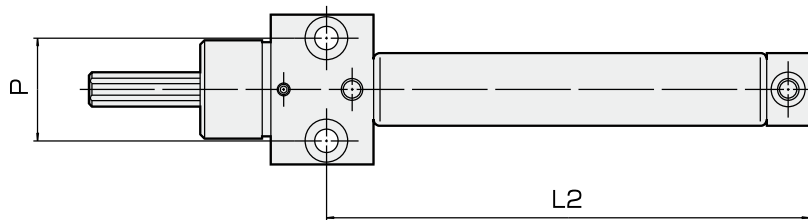


JKXB Series

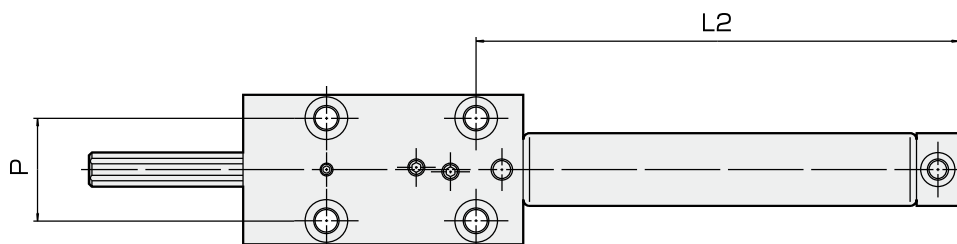


All the products are the same as JKX for the dimension from the head cover end to the rod cover mounting hole (mark L2 in the figure) and the mounting hole pitch (mark P in the figure). Here, the dimension from the mounting hole to the rod end is different.

JKX Series



JKXB Series

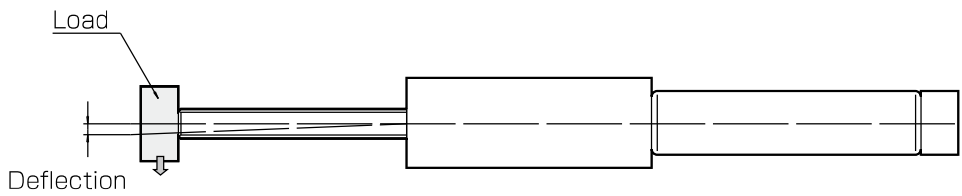


MATTERS TO BE NOTED FOR DESGINING

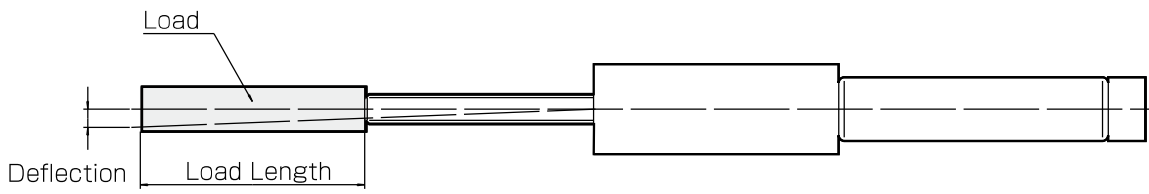
⚠ Caution

Rod End Deflection in case of Horizontal Use

Deflection is generated due to the load mounted at the rod end.
See the graphs on pages 918 for allowable load mass and deflection.



When the load length is long, the deflection at the load end is larger than that at the rod end.

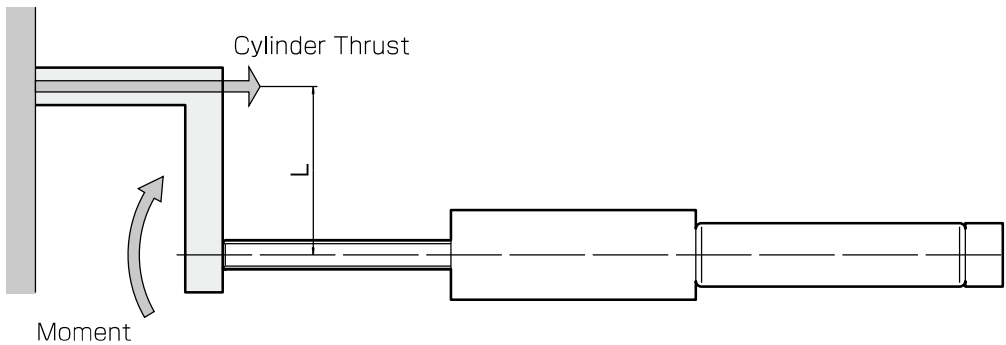


In this case, read the deflection from the graph taking the length of the load length plus cylinder stroke as cylinder stroke.

Example: Cylinder Stroke.....100mm
Load Length.....50mm
Assuming 100+50=150mm as cylinder stroke,
read the deflection at the point (100+50)mm of cylinder stroke from the graph.

Moment Generated by Cylinder Thrust in case of Offset Contact

When a load/work is put into contact at an offset point from the rod as shown, a large moment is generated due to cylinder thrust.
Check the table of allowable moment.



Moment=Cylinder thrust x L(offset distance)

F CYLINDER Double Bearing Type

EXC

When an external force (lateral load) acts on the rod

In case where an external force (lateral load) acts temporarily on the rod end when the cylinder stopped, read deflection from the broken lines on the graphs

Rod Deflection

In case where a load is light, but the stroke is long, or a load at the rod end is large, the rod deflection may sometimes become unexpectedly large.
Select a model referring to the graphs of deflection.

Rod Vibration

In case where stroke is long, or load mass at the rod end is large, rod vibration may be generated at the cylinder push end.
Then, decrease the speed or select a model with a size larger dia. rod.
Also, when the rigidity of the base for mounting the cylinder is not sufficient, enhance the rigidity of the base.

Mounting of Load

When mounting a load by using a male or female thread at the rod end, set a spanner on the across flats of the rod to prevent the tightening torque from being applied to the bearing.

Cushion Needle Adjustment

The air cushion provided for JKX 20 to 40 is adjusted before shipping but can be adjusted by turning the needle according to the condition of use.
After adjustment, be sure to secure by tightening the lock nut.
If the cushion needle is opened too much, the air cushion does not function and excessive impact may be applied to the piston at the stroke end, causing damage or failure.

Rolling Feel in Bearing

The bearing (ball spline) of this product is slightly preloaded. Accordingly, when the rod is moved by hand, rolling of balls inside the bearing may cause slight feel of operation discontinuity or difference in the rolling resistance between products. This is due to preload of the bearing and does not affect the performance.

Stroke Adjustment of Push-out Adjustment Types (ZES and ZEL)

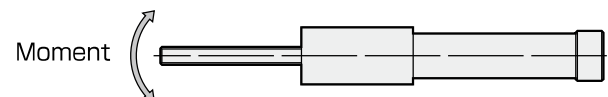
When adjusting the stroke, loosen the lock nut and turn the stopper for stroke adjustment.
When loosening the lock nut, set a spanner on the across flats of both the lock nut and the stopper for stroke adjustment.
Turning the stopper for stroke adjustment without loosening the lock nut causes the torque to be applied to the push-out adjustment rod as well, which may cause loosening of the connection between the rod and the piston, leading to failure.
After stroke adjustment, lock by setting a spanner on the across flats of both the lock nut and the stopper for stroke adjustment.
Use a spanner of an appropriate size.
Use of a monkey or pipe wrench may hinder correct adjustment, causing failure.

ALLOWABLE MOMENT

In case where a moment load is applied to the rod end

In case where the cylinder is operated under constant moment

Model	Allowable Moment N·m
JKXB12	1.2
JKXB16	2.6
JKXB20	5.2
JKXB25	6.3
JKXB32	6.3
JKXB40	16



In case where a moment is applied temporarily while the cylinder stopped

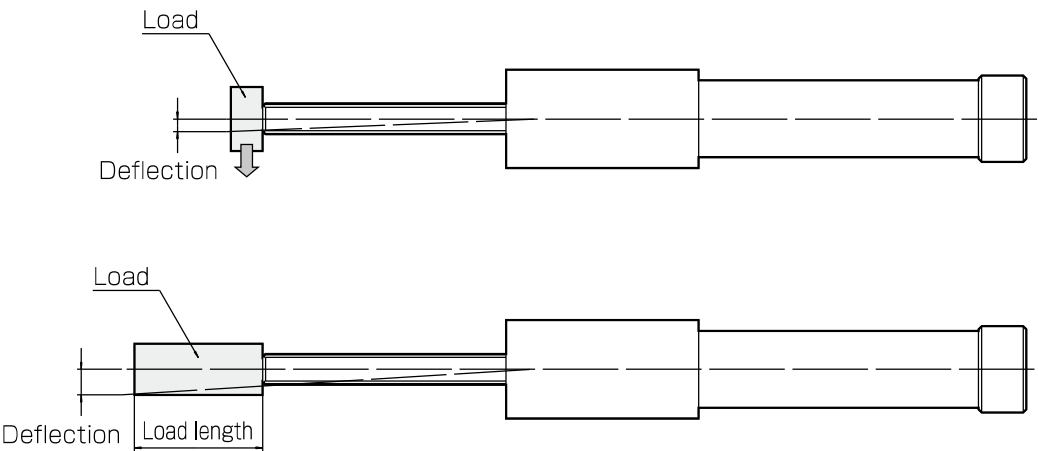
Model	Allowable Moment N·m
JKXB12	1.4
JKXB16	3.3
JKXB20	6.5
JKXB25	15
JKXB32	15
JKXB40	27

1N·m=0.102kgf·m

ALLOWABLE LOAD MASS, ALLOWABLE LATERAL LOAD AND ROD DEFLECTION

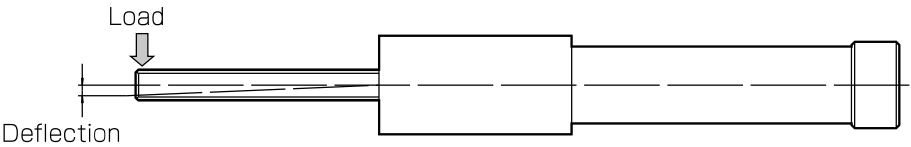
●Load Mass and Rod Deflection

In case of horizontal usage of the cylinder, deflection is generated in the rod due to the load mounted at the rod end. The relation between allowable load mass and deflection is shown in the graphs below. Applied load mass shall be within the range indicated by each solid line correspondent to each stroke length.

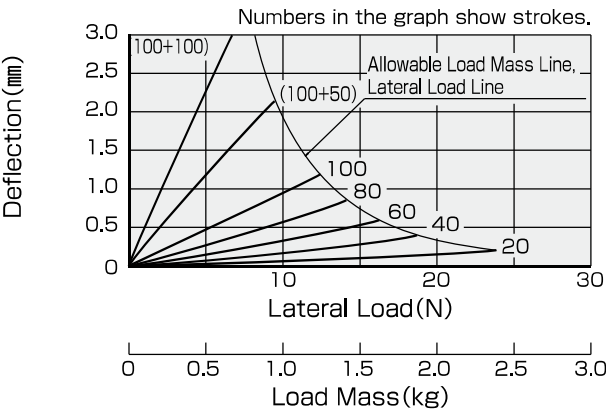


●Lateral Load Rod Deflection

Under the condition that the cylinder is stopped the relation between deflection due to an external force (lateral load) acting temporarily on the rod and allowable load mass is shown in the graphs below. Applied lateral load shall be smaller than the value indicated by each broken line correspondent to each stroke length. If an external force acts on constantly, see the values of allowable load mass in the graphs.



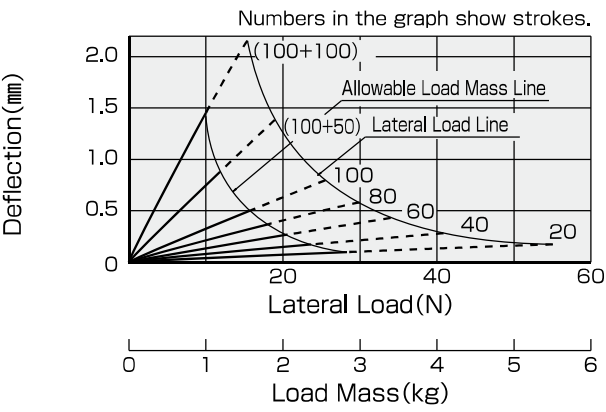
JKXB12



Stroke (mm)	Allowable Load Mass (kg)	Allowable Lateral Load (N)
20	2.4	24
40	1.9	19
60	1.6	16
80	1.4	14
100	1.2	12
(100+50)	0.96	9.6
(100+100)	0.78	7.8

Quotation () indicates (Stroke + Load Length)

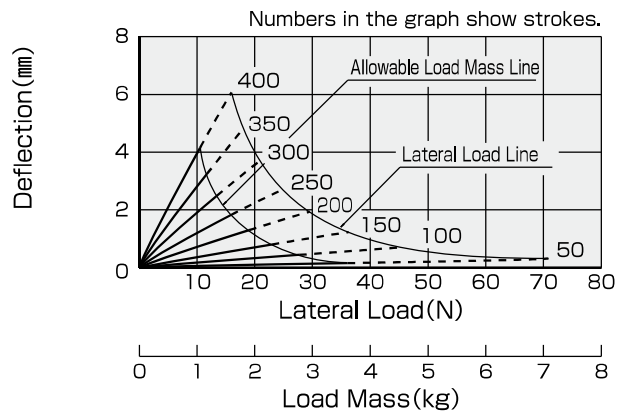
JKXB16



Stroke (mm)	Allowable Load Mass (kg)	Allowable Lateral Load (N)
20	3.0	55
40	2.5	43
60	2.1	35
80	1.8	29
100	1.6	25
(100+50)	1.2	19
(100+100)	1.0	15

Quotation () indicates (Stroke + Load Length)

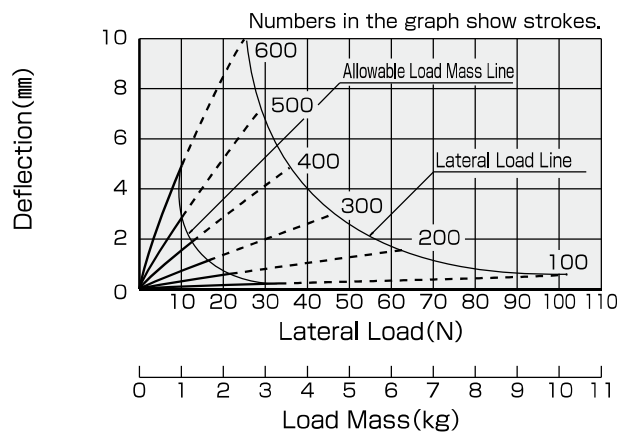
JKXB20



Stroke (mm)	Allowable Load Mass (kg)	Allowable Lateral Load (N)
50	4.0	71
100	2.9	48
150	2.3	36
200	1.9	29
250	1.6	24
300	1.4	21
350	1.2	18
400	1.1	16

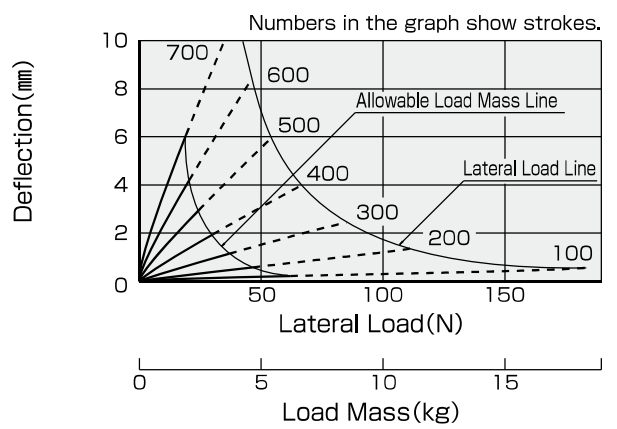
JKXB25

JKXB32



Stroke (mm)	Allowable Load Mass (kg)	Allowable Lateral Load (N)
100	3.3	100
200	2.2	64
300	1.6	46
400	1.3	36
500	1.1	30
600	0.92	25

JKXB40



Stroke (mm)	Allowable Load Mass (kg)	Allowable Lateral Load (N)
100	7.3	180
200	5.0	110
300	3.8	84
400	3.0	66
500	2.5	55
600	2.2	46
700	1.9	40

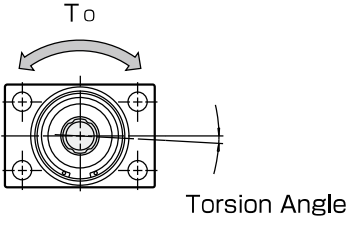
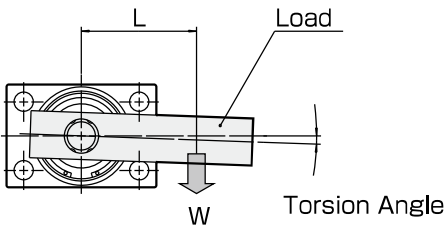
ALLOWABLE TORQUE AND TORSION ANGLE OF ROD

Torsion angle at the rod end when the rod is pushed out

- In case where the cylinder is operated under constant torque (dynamic allowable torque)
- when a torque is applied temporarily while the cylinder stopped (static allowable torque)

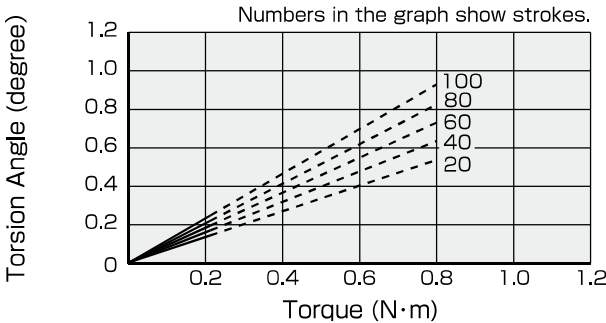
A torsional moment (torque) is generated when a load in eccentric condition is mounted at the rod end as shown below.
When the cylinder is operated in this condition, the torque shall be smaller than the value indicated by each solid line in the graphs below.

When a torque (T_0) is applied temporarily to the rod from outside while the cylinder stopped, the torque shall be smaller than the value indicated by each broken line in the graphs below.



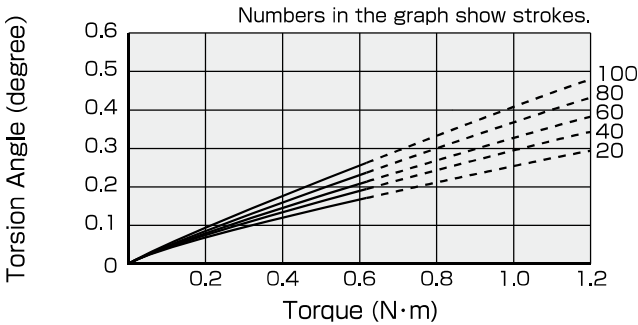
$T=L \times W$
T: Torsional moment
L: Distance between the rod center and the center of gravity of a load
W: Load mass

JKXB12



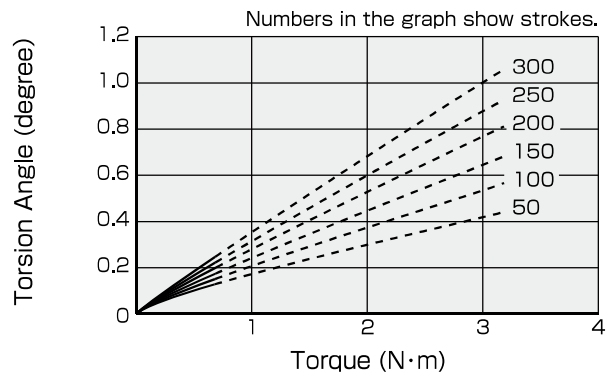
Dynamic Allowable Torque	Static Allowable Torque
0.20N·m	0.80N·m

JKXB16



Dynamic Allowable Torque	Static Allowable Torque
0.41N·m	1.2N·m

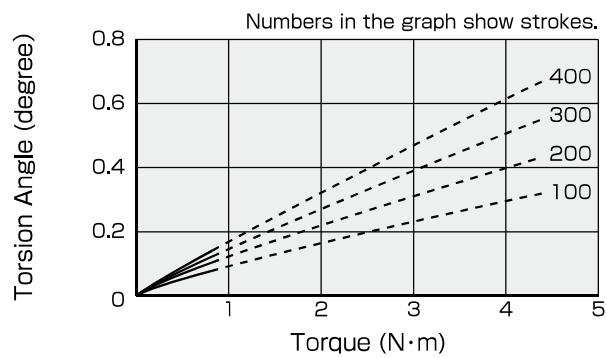
JKXB20



Dynamic Allowable Torque	Static Allowable Torque
0.64N·m	3.2N·m

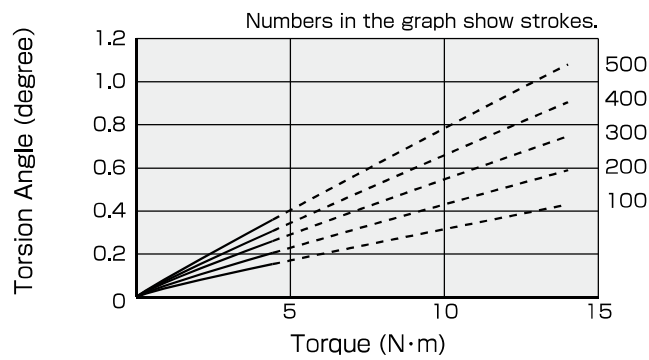
JKXB25

JKXB32



Dynamic Allowable Torque	Static Allowable Torque
0.88N·m	4.4N·m

JKXB40



Dynamic Allowable Torque	Static Allowable Torque
4.3N·m	13.7N·m

BEARING FOR FLOATING MECHANISM(option code FN)

●Prevention of damage when work installation fails

In case where work installation fails due to incomplete location, defective parts, etc. and the work is bumped, the floating mechanism will prevent the work from damage by absorbing the shock.

●Softening of impact force at work installation

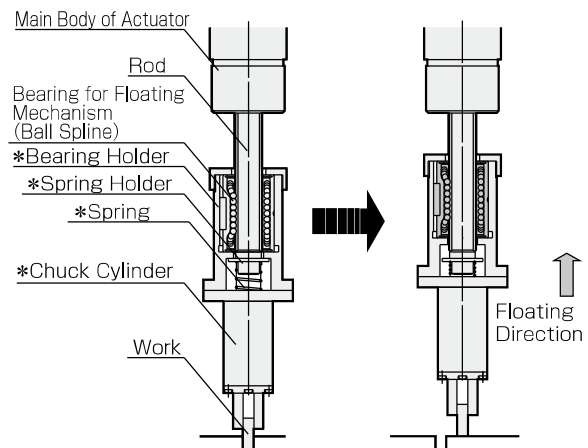
In case where an impact force due to actuator velocity may cause breakage of work or defective assembling at work installation, the floating mechanism will prevent the work from such damage by softening the impact force and help to achieve smooth work installation and press fit.

●Work installation at different levels

In case where works are installed at the positions of different levels, only one actuator can perform the operation by setting floating stroke by level difference in advance.

- The bearing for floating mechanism incorporates the high precision and high, rigidity ball spline.

●Construction and Application Example



- As for the parts (parts marked * in the figure above) other than the bearing for floating mechanism, it is required to design and produce the construction and parts fitting with the machine at your side.

■MATTERS TO BE NOTED FOR DESIGNING

⚠Caution

①Specific resistance of Bearing

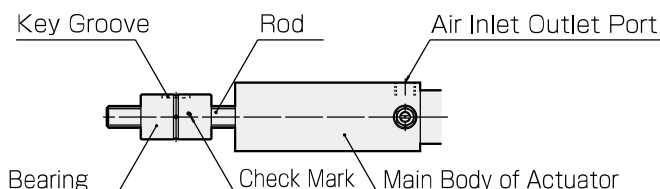
The bearing for floating mechanism has the specific resistance respectively. Pay attention to the setting load value of the spring. (The spring force shall be determined from a viewpoint of the mechanism as a whole)

Unit: N

Model	Specific Resistance	Model	Specific Resistance
JKXB12	2.5	JKXB25	4
JKXB16	3	JKXB32	4
JKXB20	3.5	JKXB40	5

②Direction of Bearing key groove and check mark

The check mark means the digit indicated in the optional place on the outside of the bearing. The digit are optional and mean nothing. When the bearing is mounted to the rod, insert straight so that the key groove of the bearing locates at the air inlet port side of actuator and the check mark at the body side of actuator. If it is inserted forcibly, the balls inside the bearing may come off.



③Tolerance of the housing inside dia. for the bearing

Generally, the tolerance between the bearing for floating mechanism and the housing shall be by transition fit (J6). In case where accuracy is not so required, it shall be by loose fit (H7).

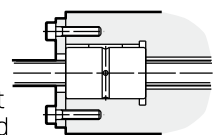
Tolerance of Housing Inside Dia.	General Service Conditions	J6
	Accuracy is not required	H7

④Combination of the bearing and the rod

The bearing for floating mechanism and the rod are combinedly supplied. If other bearing, which is ordered additionally, attached to other actuator (including the part of the same specification), or purchased from somewhere afterward, is mounted to the rod, this may cause malfunction or poor accuracy. Be sure to use bearing attached to the actuator. The check mark (See clause 2 of this note.) on the bearing has nothing to do with the combination with rod. Even if the check mark on the bearing is the same, the combination of the bearing and the rod is another matter.

⑤Mounting of the bearing

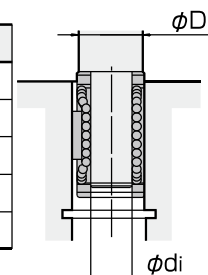
The right figure shows a mounting example of the bearing for floating mechanism. Fixing strength in the axial direction is not so required, but only driving fit is not enough to hold and another measures shall be taken.



⑥Insertion of the bearing

When the bearing for floating mechanism is mounted, use a jig and not to tilt the cylinder to be parallel against the rod and insert carefully.

Model	di	D
JKXB12	φ 5.0	φ13.5
JKXB16	φ 7.0	φ15.5
JKXB20	φ 8.5	φ20.5
JKXB25, 32	φ11.0	φ23.5
JKXB32	φ14.5	φ30.5



⑦Actual stroke of the actuator

The length of actuator stroke minus floating stroke is the stroke by which the work actually shifts. Be careful to select stroke.

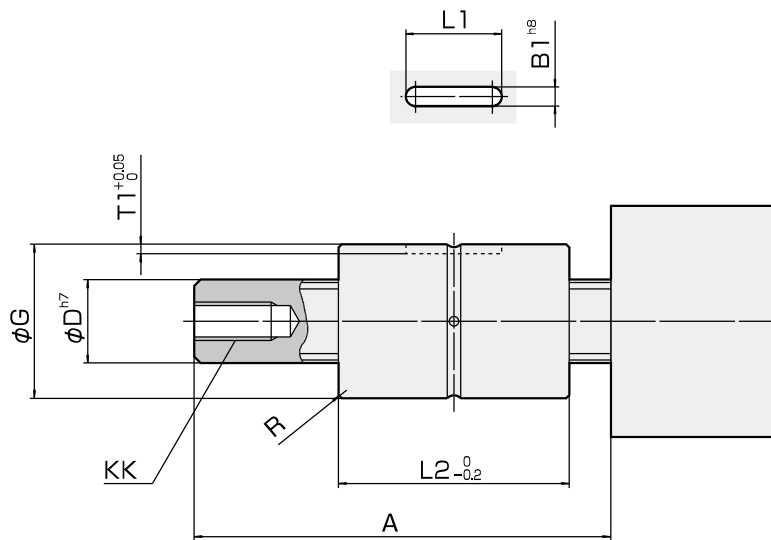
DIMENSIONS OF ROD END WITH BEARING FOR FLOATING MECHANISM (Option code FN) —

Female Thread Rod End(KK)
Fastening Torque
Unit: N·m

Model	Fastening Torque
JKX12	1.1
JKX16	1.7
JKX20	4.8
JKX25	6.6
JKX32	6.6
JKX40	20

Bearing Mass
Unit: g

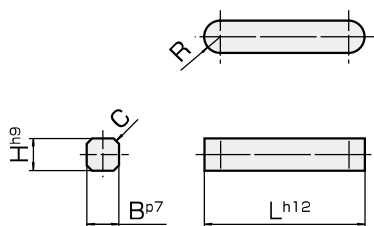
Model	Mass
JKXB12	17
JKXB16	18
JKXB20	50
JKXB25	55
JKXB32	55
JKXB40	165



Model	A	B1	D	G	KK	L1	L2	R	T1
JKXB12	50	2.5	φ 6	φ 14 _{-0.011} ⁰	M3×0.5 depth 6	10.5	25	0.5	1.2
JKXB16	50	2.5	φ 8	φ 16 _{-0.011} ⁰	M4×0.7 depth 8	10.5	25	0.5	1.2
JKXB20	60	3	φ 10	φ 21 _{-0.013} ⁰	M5×0.8 depth 10	13	33	0.5	1.5
JKXB25	65	3	φ 13	φ 24 _{-0.013} ⁰	M6×1 depth 12	15	36	0.5	1.5
JKXB32	65	3	φ 13	φ 24 _{-0.013} ⁰	M6×1 depth 12	15	36	0.5	1.5
JKXB40	85	3.5	φ 16	φ 31 _{-0.013} ⁰	M8×1.25 depth 13	17.5	50	0.5	2

Note 1. The rod projection length (mark A in the figure) is longer than the standard type. Pay attention to the overall length of the cylinder.
 Note 2. JKX40 is different from the above figure for the groove shape of the rod spline.
 See pages 854~869 for other detailed dimensions of the entire product.
 Note 3. A bolt and a washer are attached at the female thread rod end (mark KK in the figure) to prevent the bearing from coming off when delivered. They shall be removed when the cylinder is used. (Adhesive is not used.)

DIMENSIONS of KEY (A KEY IS ATTACHED TO THE PRODUCT.)

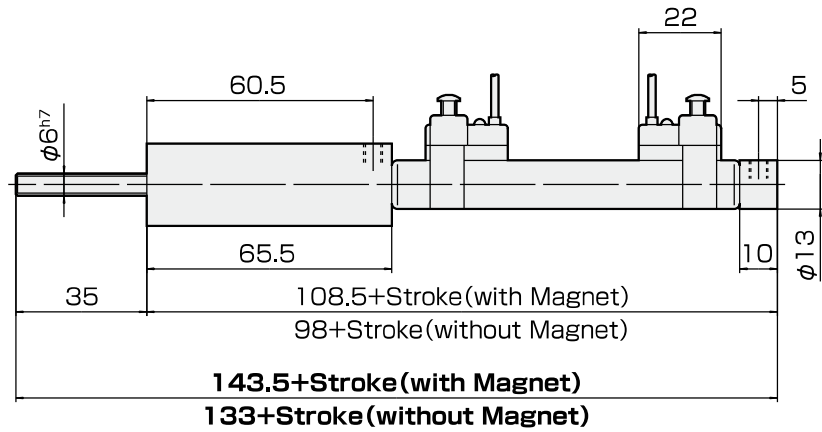
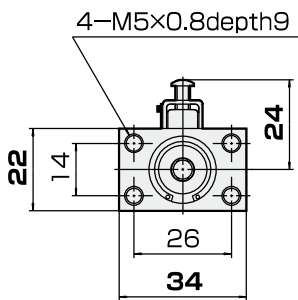
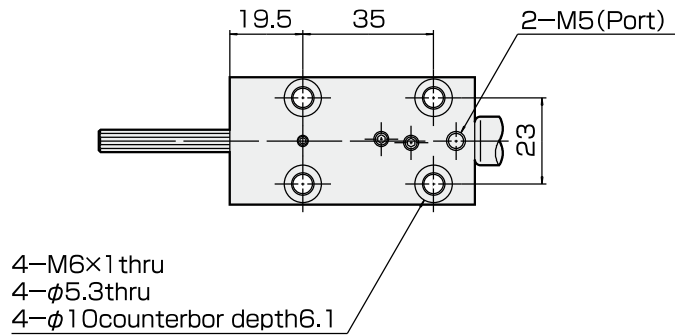


Model	B	C	H	L	R
JKXB12	2.5	0.5	2.5	10.5	1.25
JKXB16	2.5	0.5	2.5	10.5	1.25
JKXB20	3	0.5	3	13	1.5
JKXB25	3	0.5	3	15	1.5
JKXB32	3	0.5	3	15	1.5
JKXB40	3.5	0.5	3.5	17.5	1.75

DIMENSIONS(mm) JKXB12 STANDARD TYPE

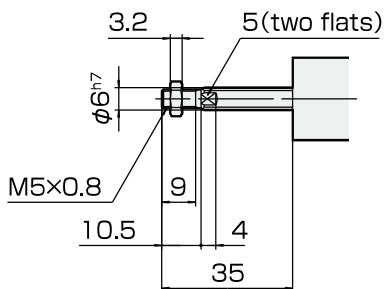
JKXB(S)-SD12-(Stroke)

Bore Size

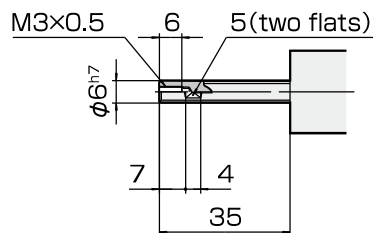


Note: Fixing screw which is to fix the key of bearing jumps out 0.3mm on the port surface of rod cover.

Male Thread Rod End (WT)

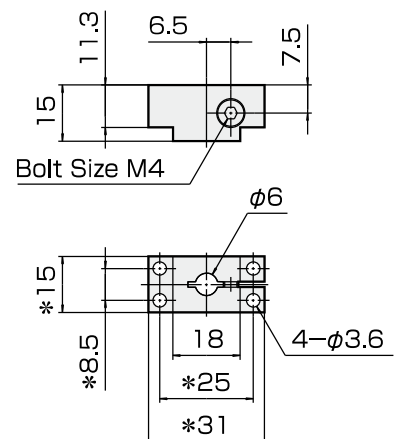


Female Thread Rod End (WS)



Flange Rod End (ZT)

Optional parts code ZT (JKX12)

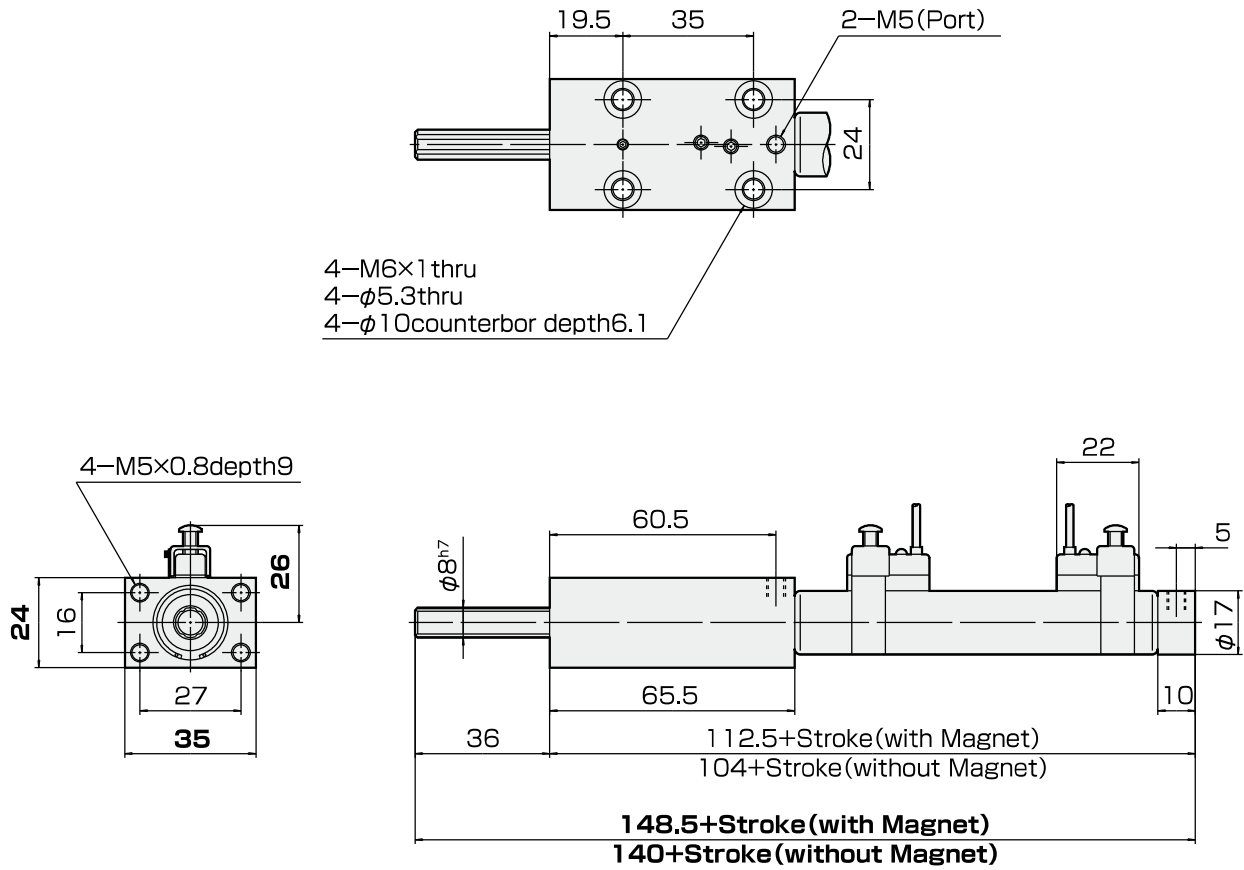


Note: Pay attention that the dimension marked * is different from previous type flange rod end ZS.

DIMENSIONS(mm) JKXB16 STANDARD TYPE

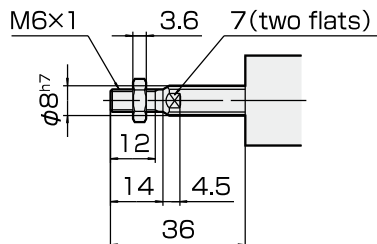
JKXB(S)–SD16–(Stroke)

Bore Size

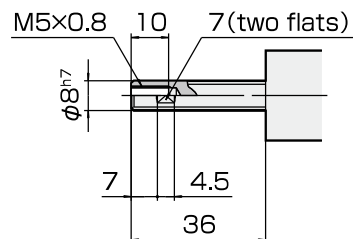


Note: Fixing screw which is to fix the key of bearing jumps out 0.3mm on the port surface of rod cover.

Male Thread Rod End(WT)

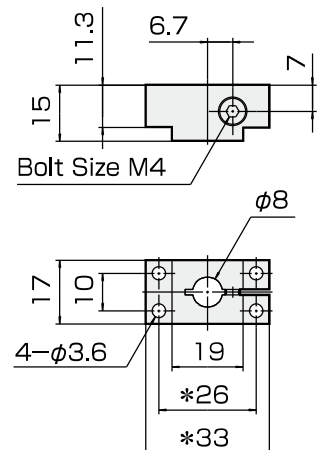


Female Thread Rod End(WS)



Flange Rod End(ZT)

Optional parts code ZT(JKX16)



Note: Pay attention that the dimension marked * is different from previous type flange rod end ZS.

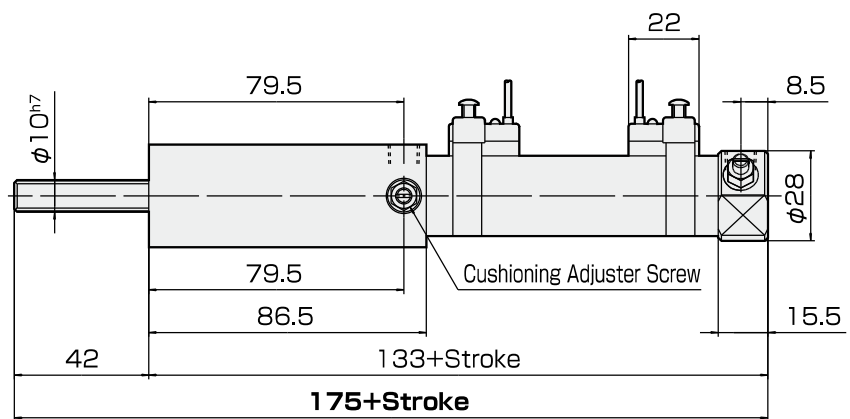
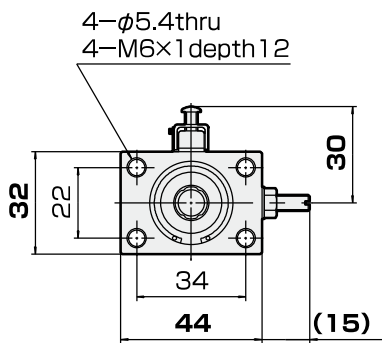
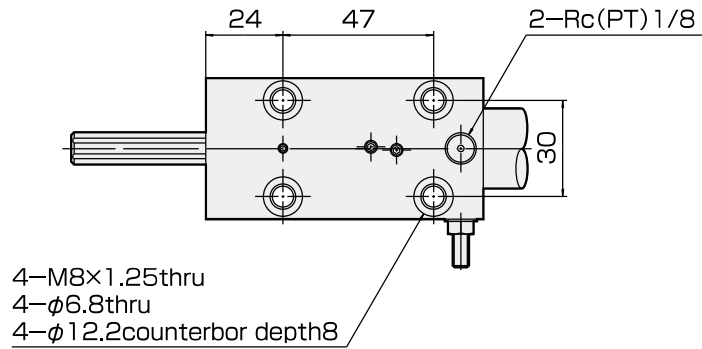
JKXB

F CYLINDER Double Bearing Type

DIMENSIONS(mm) JKXB20 STANDARD TYPE

JKXB(S)–SD20–(Stroke)

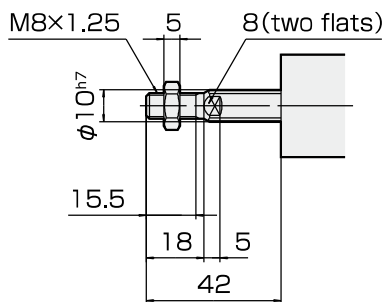
Bore Size



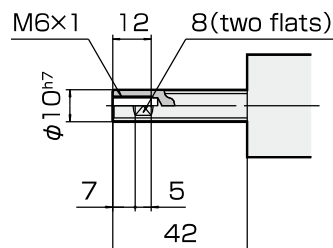
JKXB

F CYLINDER Double Bearing Type

Male Thread Rod End(WT)

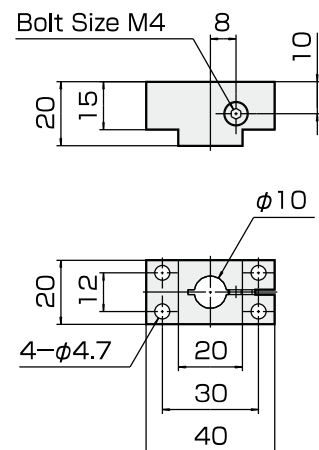


Female Thread Rod End(WS)



Flange Rod End(ZT)

Optional parts code ZT(JKX20)

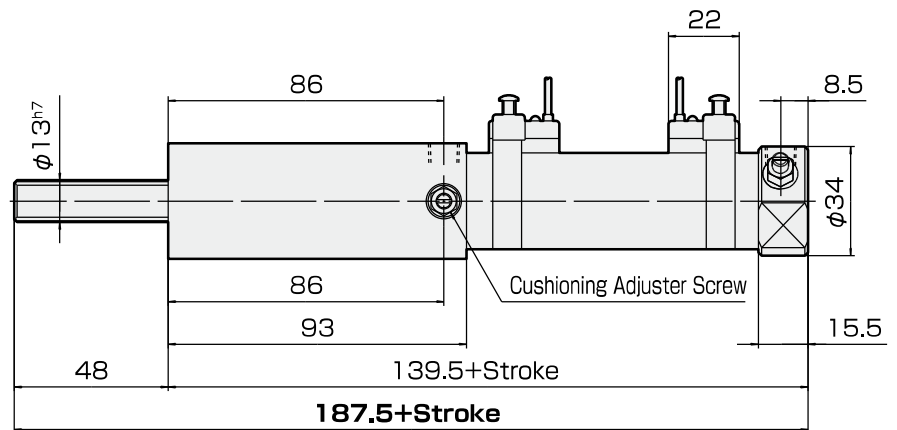
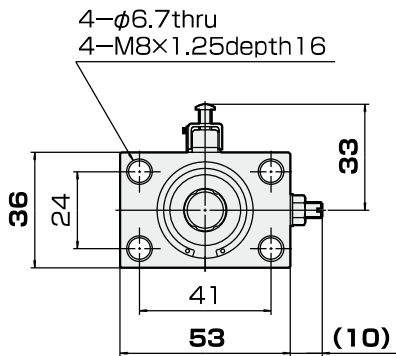
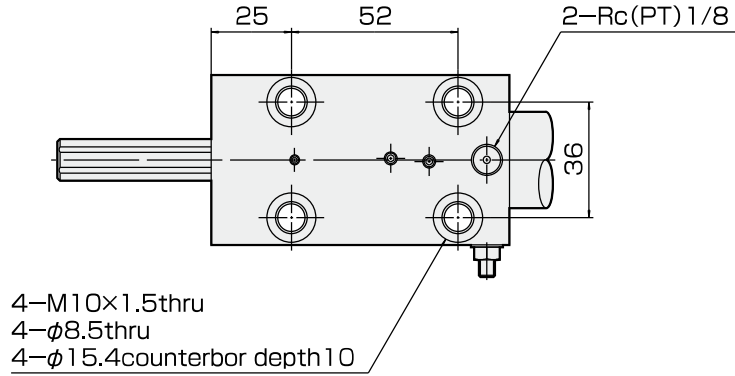


Note: Interchangeable with the previous type flange rod end ZS.

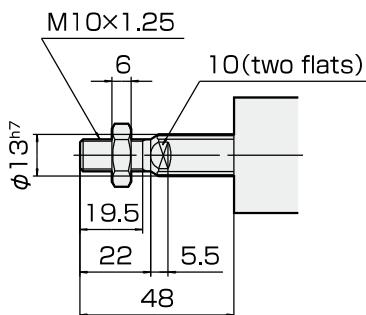
DIMENSIONS(mm) JKXB25 STANDARD TYPE

JKXB(S)–SD25–(Stroke)

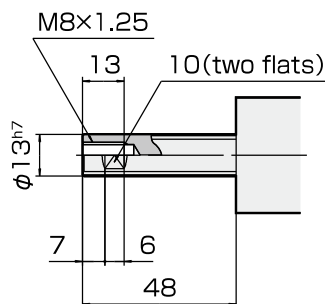
└─
Bore Size



Male Thread Rod End(WT)

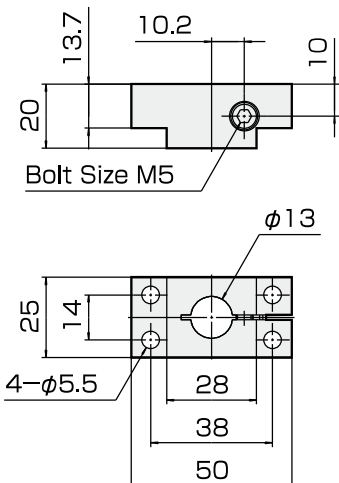


Female Thread Rod End(WS)



Flange Rod End(ZT)

Optional parts code ZT(JKX25)



Note: Interchangeable with the previous type flange rod end ZS.

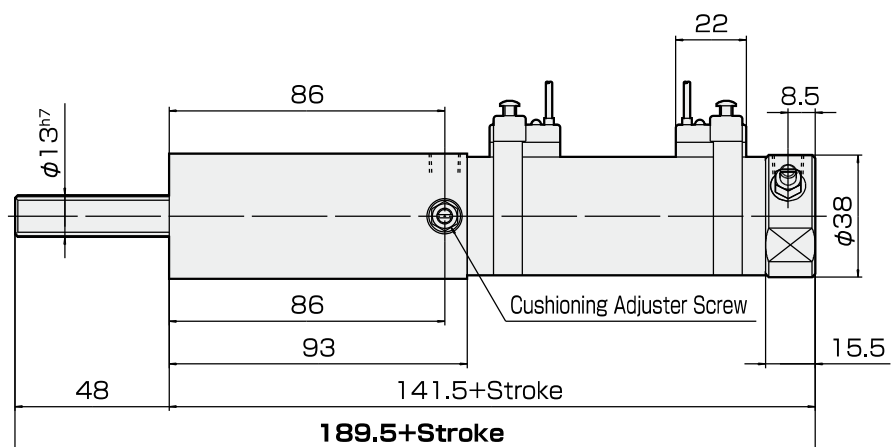
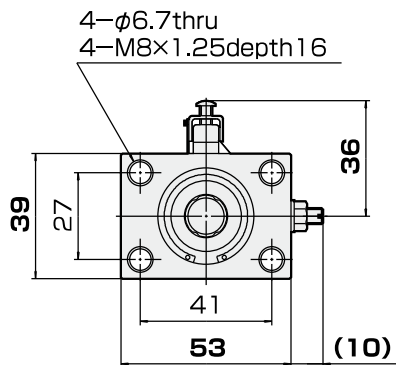
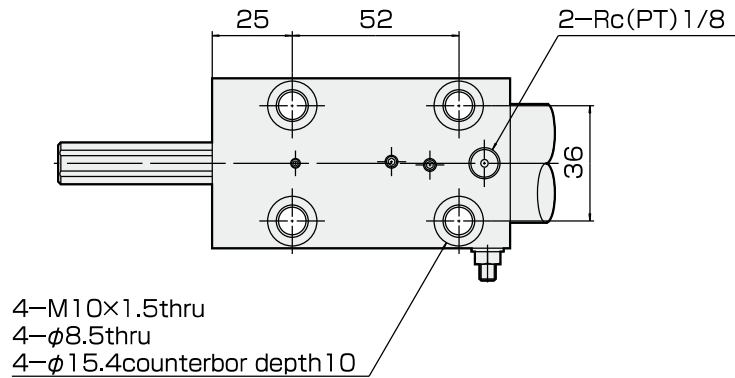
JKXB

F CYLINDER Double Bearing Type

DIMENSIONS(mm) JKXB32 STANDARD TYPE

JKXB(S)–SD32–(Stroke)

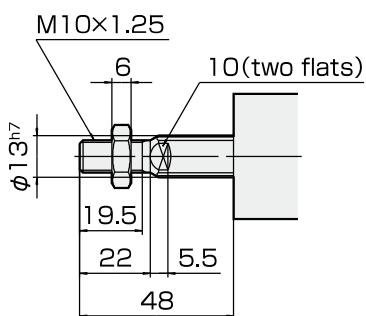
└─
Bore Size



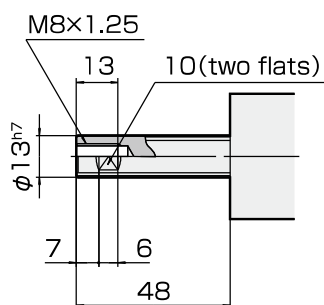
JKXB

F CYLINDER Double Bearing Type

Male Thread Rod End(WT)

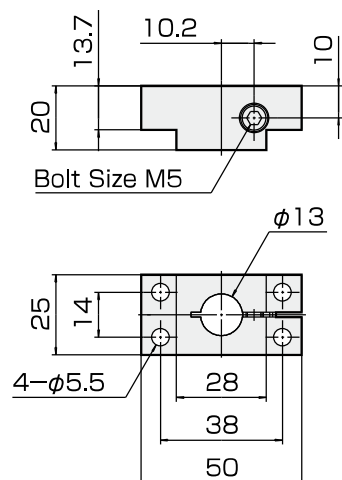


Female Thread Rod End(WS)



Flange Rod End(ZT)

Optional parts code ZT(JKX32)

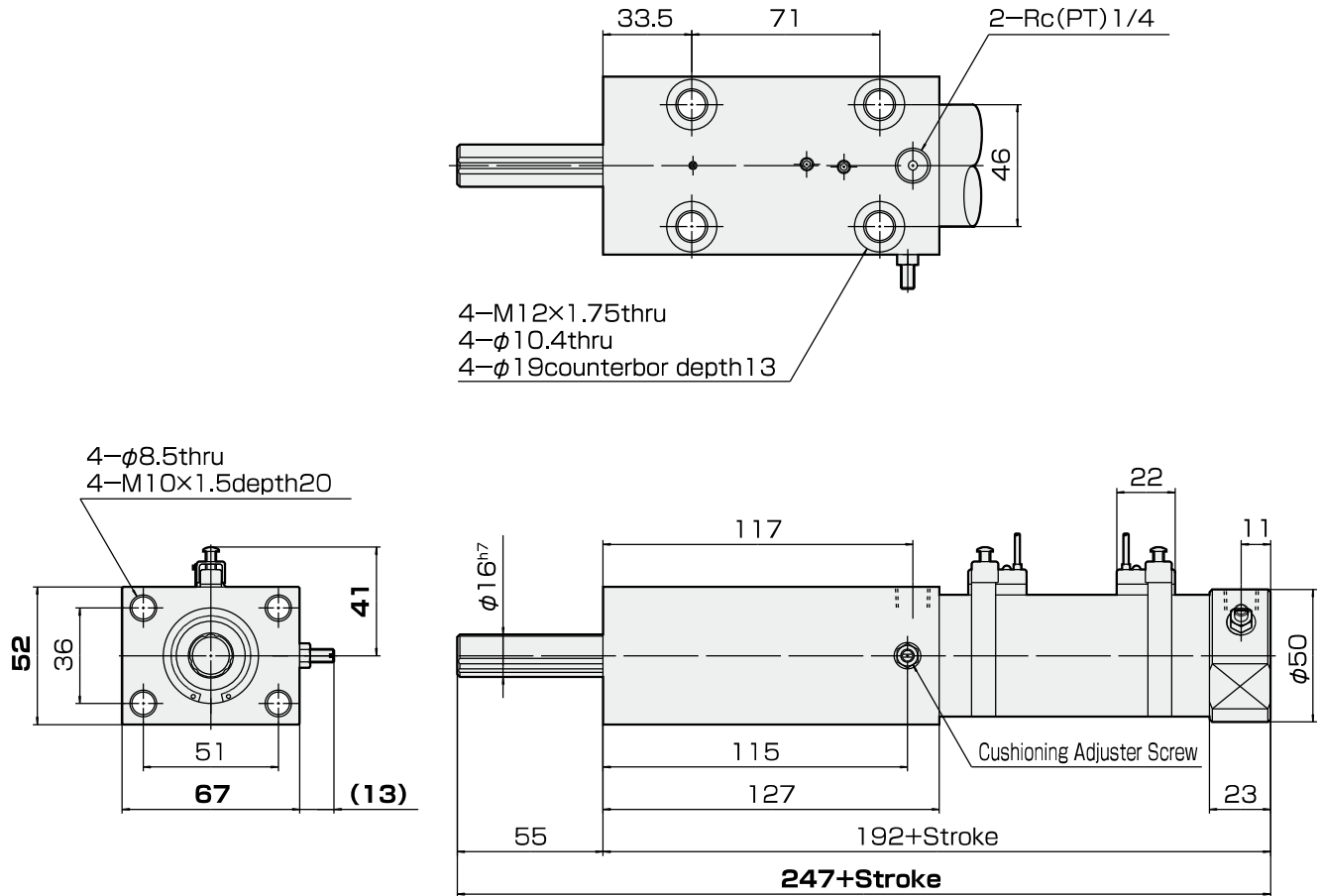


Note: Interchangeable with the previous type flange rod end ZS.

DIMENSIONS(mm) JKXB40 STANDARD TYPE

JKXB(S)–SD40–(Stroke)

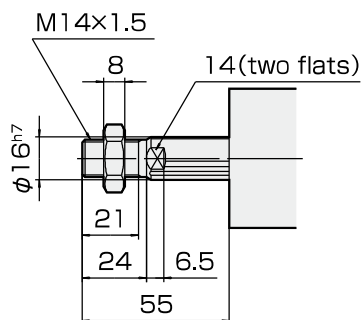
┌
Bore Size



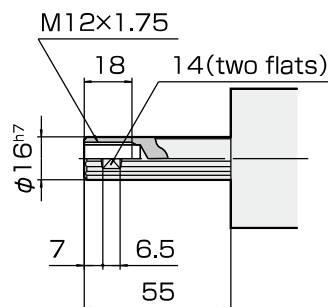
JKXB

F CYLINDER Double Bearing Type

Male Thread Rod End(WT)

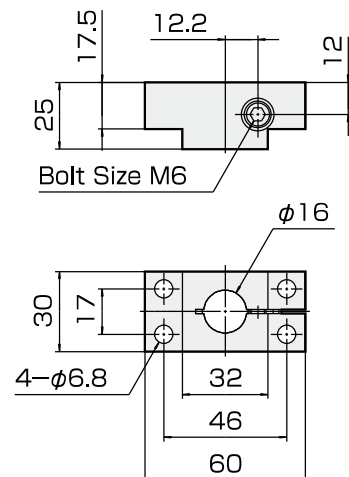


Female Thread Rod End(WS)



Flange Rod End(ZT)

Optional parts code ZT(JKX40)



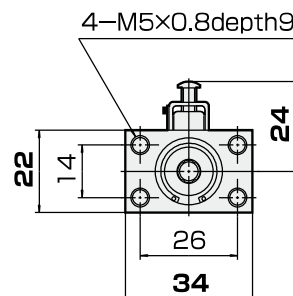
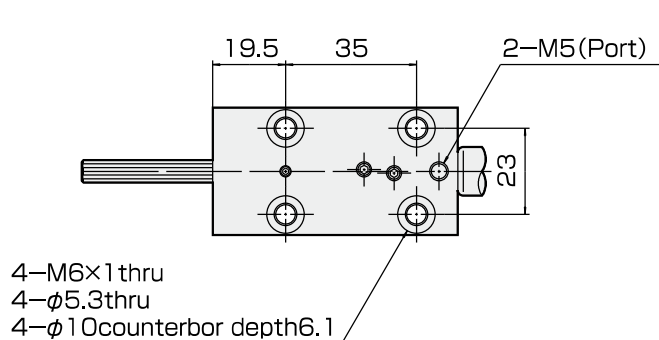
Note: Interchangeable with the previous type flange rod end ZS.

DIMENSIONS(mm) JKXB12 WITH STROKE ADJUSTER TYPE (PUSH STROKE ADJUSTMENT)

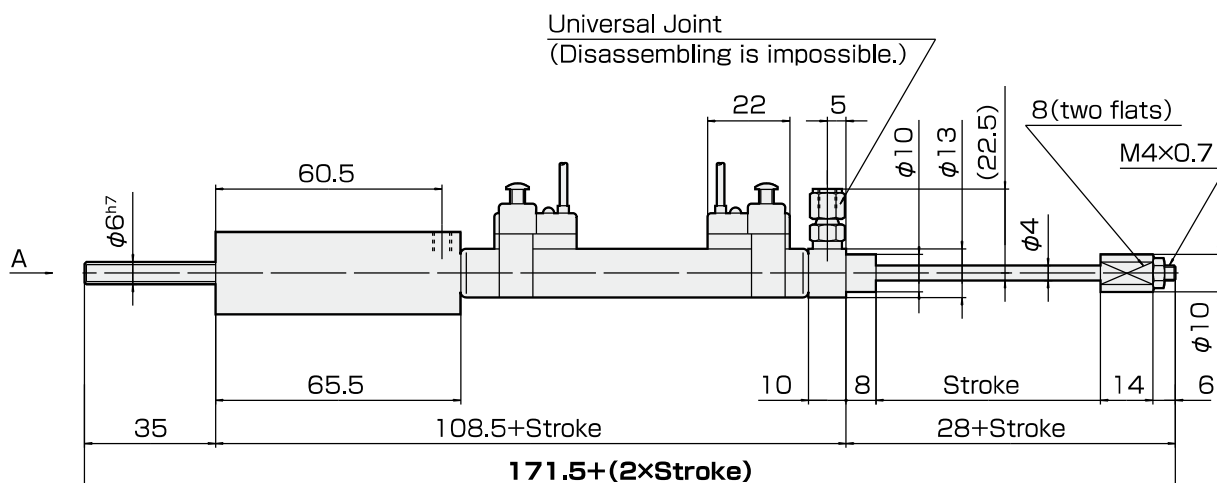
JKXB(S)–SD12–(Stroke)–ZES

Bore Size

With Stroke Adjuster
Push Stroke Adjustment ZES...5mm

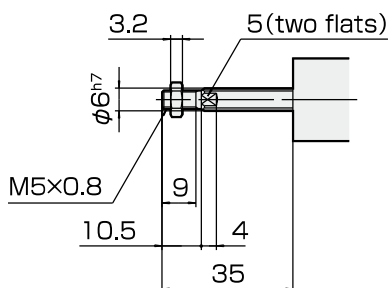


View A

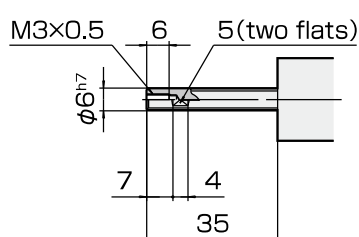


Note: In case of the stroke adjuster type, overall length of the cylinder is common to both with magnets (JKXBS) and without magnets (JKXB).
Fixing screw which is to fix the key of bearing jumps out 0.3mm on the port surface of rod cover.

Male Thread Rod End(WT)

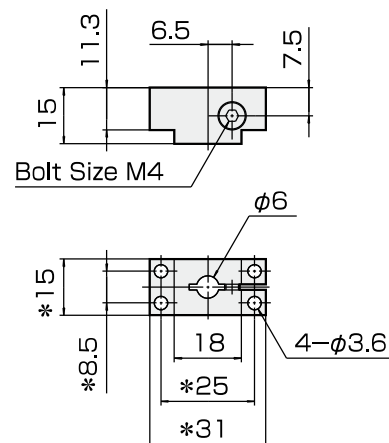


Female Thread Rod End(WS)



Flange Rod End(ZT)

Optional parts code ZT(JKX12)



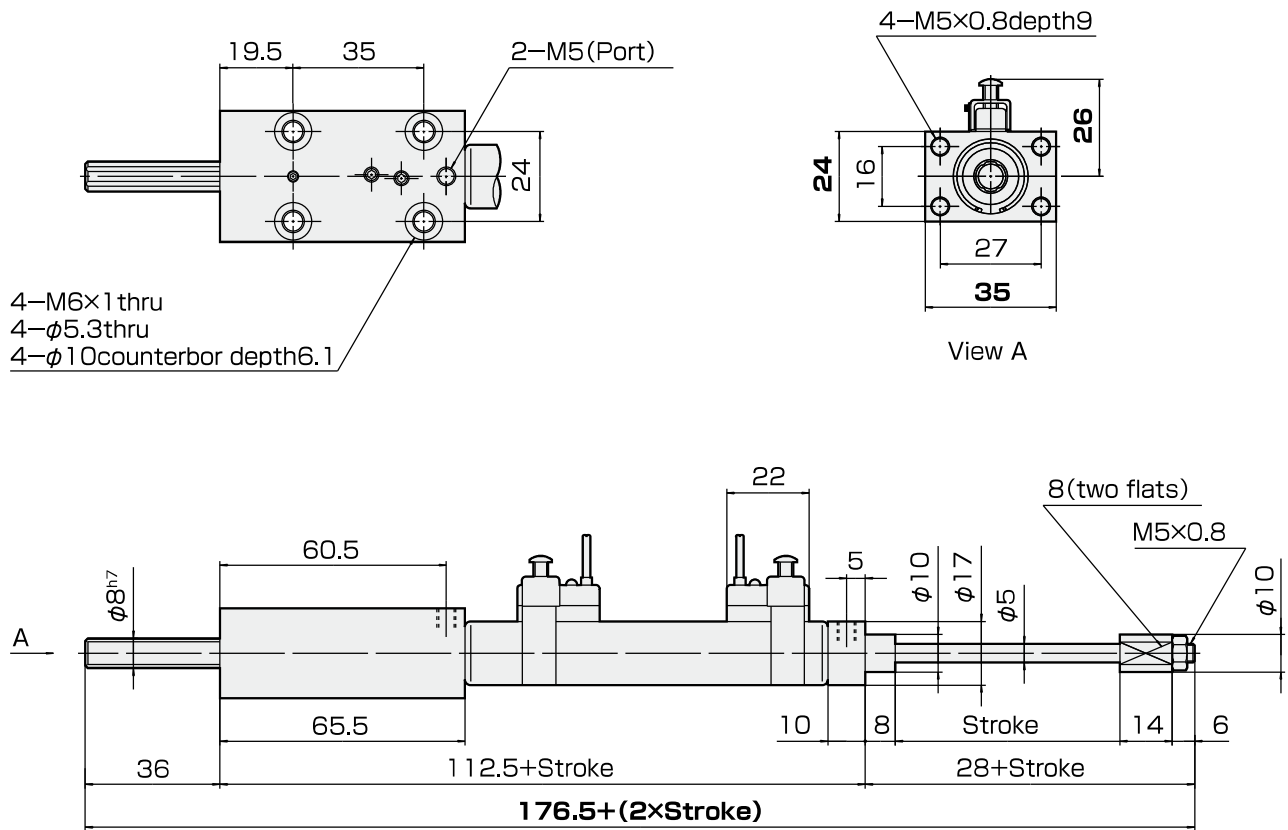
Note: Pay attention that the dimension marked * is different from previous type flange rod end ZS.

DIMENSIONS(mm) JKXB16 WITH STROKE ADJUSTER TYPE (PUSH STROKE ADJUSTMENT)

JKXB(S)–SD16–(Stroke)–ZES

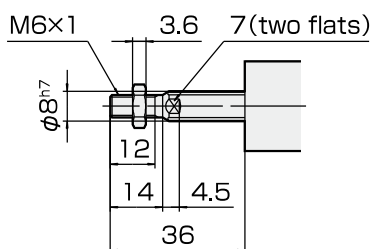
Bore Size

With Stroke Adjuster
Push Stroke Adjustment ZES...5mm

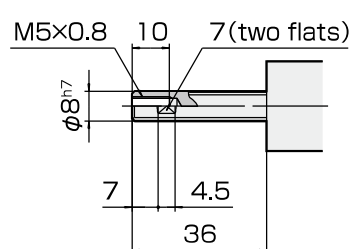


Note: In case of the stroke adjuster type, overall length of the cylinder is common to both with magnets (JKXBS) and without magnets (JKXB).
Fixing screw which is to fix the key of bearing jumps out 0.3mm on the port surface of rod cover.

Male Thread Rod End(WT)

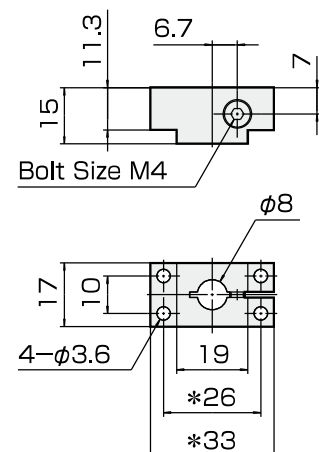


Female Thread Rod End(WS)



Flange Rod End(ZT)

Optional parts code ZT(JKX16)



Note: Pay attention that the dimension marked * is different from previous type flange rod end ZS.

JKXB

F CYLINDER Double Bearing Type

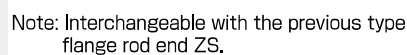
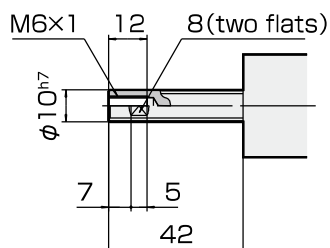
JKXB(S)-SD20-(Stroke)- $\frac{ZES}{ZFI}$

With Stroke Adjuster
Pull Stroke Adjustment ZFS...25mm
ZFL...50mm



Flange Rod End(ZT)

Bolt Size M4

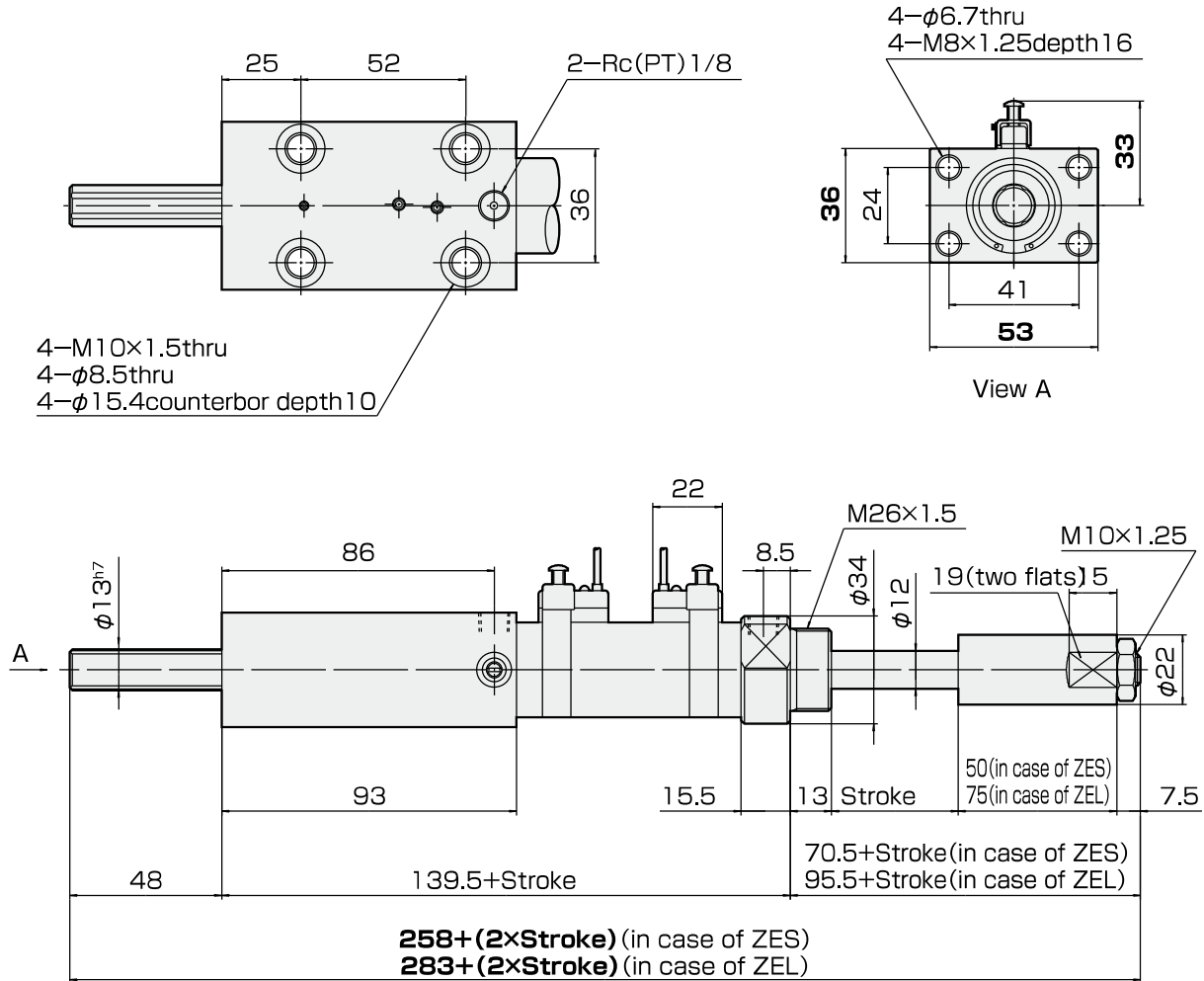


DIMENSIONS(mm) JKXB25 WITH STROKE ADJUSTER TYPE (PUSH STROKE ADJUSTMENT)

JKXB(S)–SD25–(Stroke)–ZES
ZEL

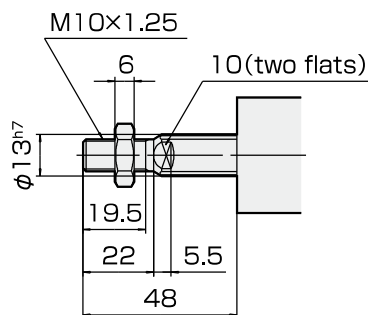
Bore Size

With Stroke Adjuster
Pull Stroke Adjustment ZFS...25mm
ZFL...50mm

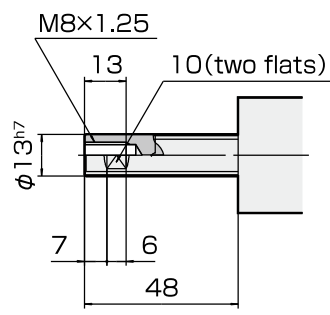


Air cushioning is available only at rod pull side.

Male Thread Rod End(WT)

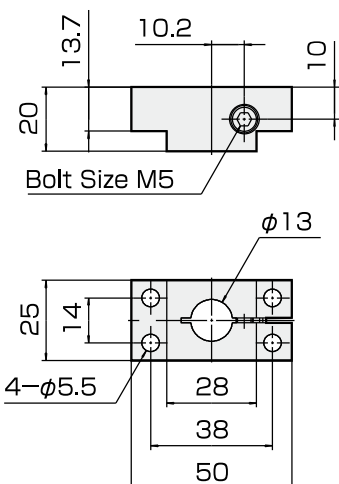


Female Thread Rod End(WS)



Flange Rod End(ZT)

Optional parts code ZT(JKX25)



Note: Interchangeable with the previous type flange rod end ZS.

JKXB

F CYLINDER Double Bearing Type

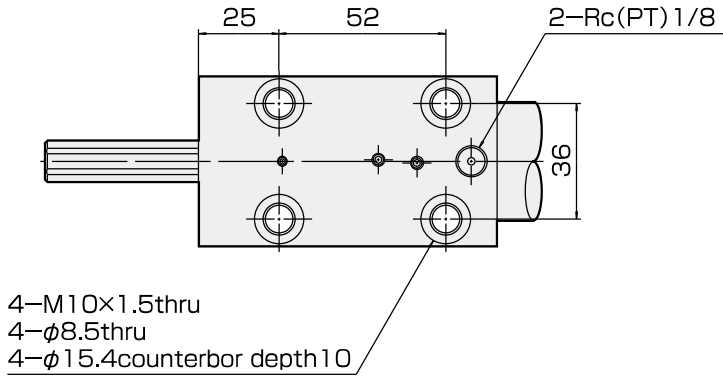
DIMENSIONS(mm) JKXB32 WITH STROKE ADJUSTER TYPE (PUSH STROKE ADJUSTMENT)

JKXB(S)–SD32–(Stroke)–

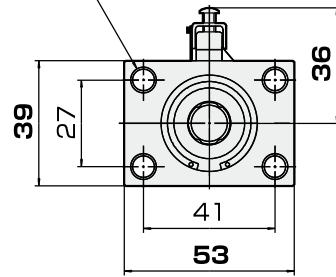
Bore Size

ZES
ZEL

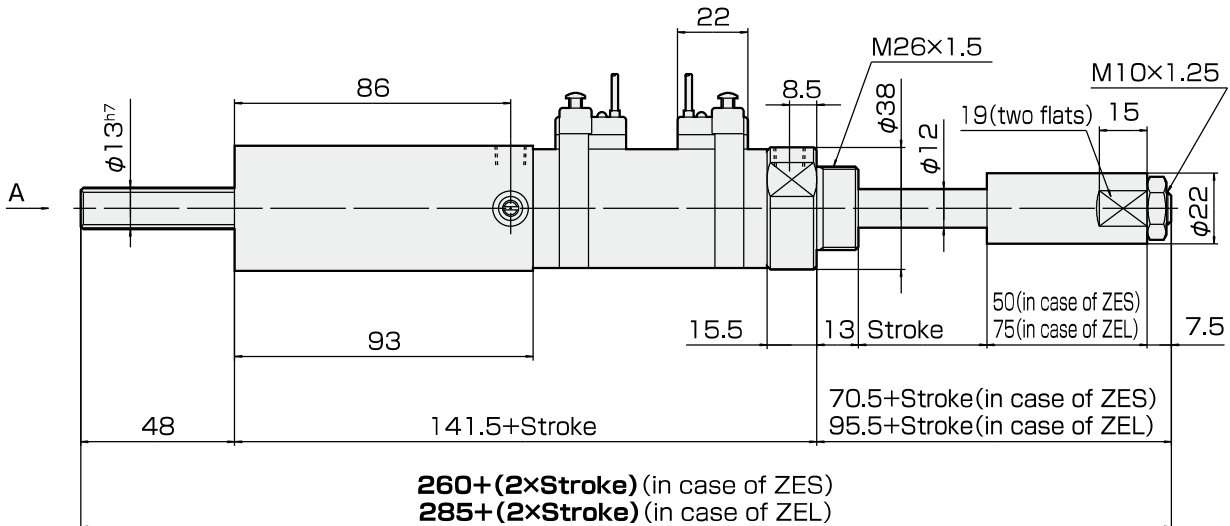
With Stroke Adjuster
Pull Stroke Adjustment ZFS...25mm
ZFL...50mm



4-φ6.7thru
4-M8×1.25depth16

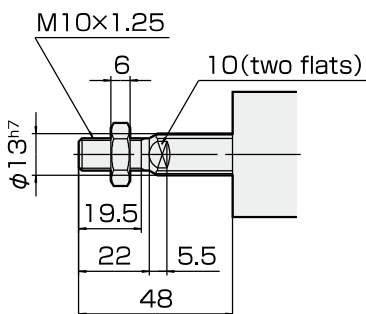


View A

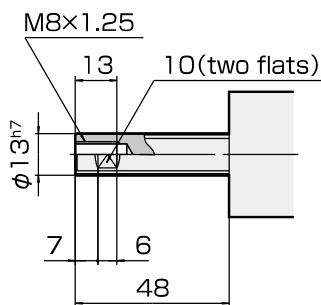


Air cushioning is available only at rod pull side.

Male Thread Rod End(WT)

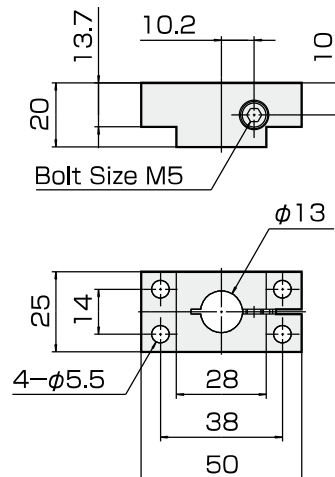


Female Thread Rod End(WS)



Flange Rod End(ZT)

Optional parts code ZT(JKX32)



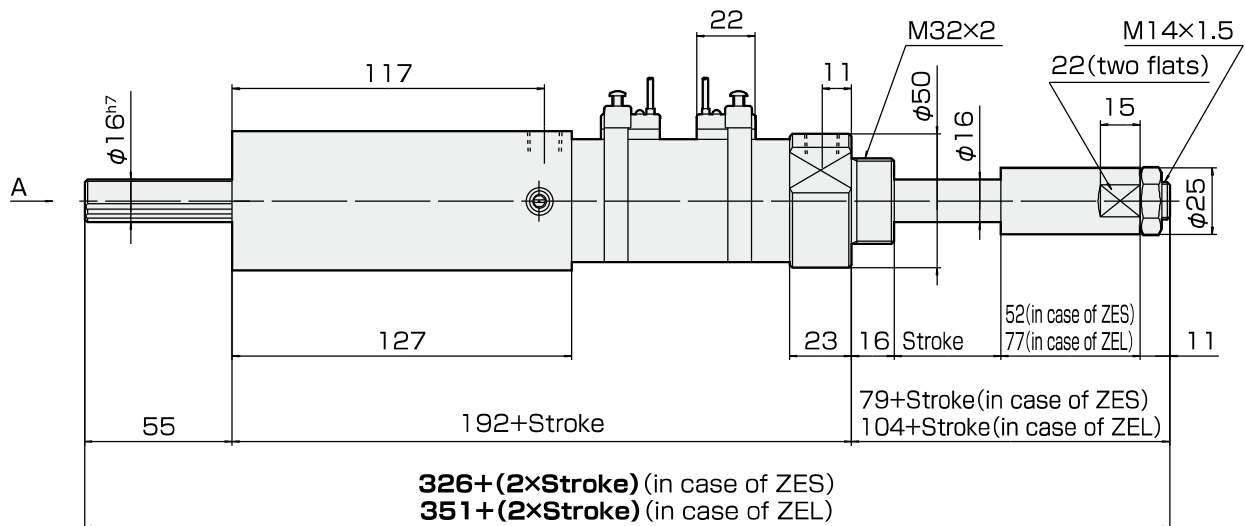
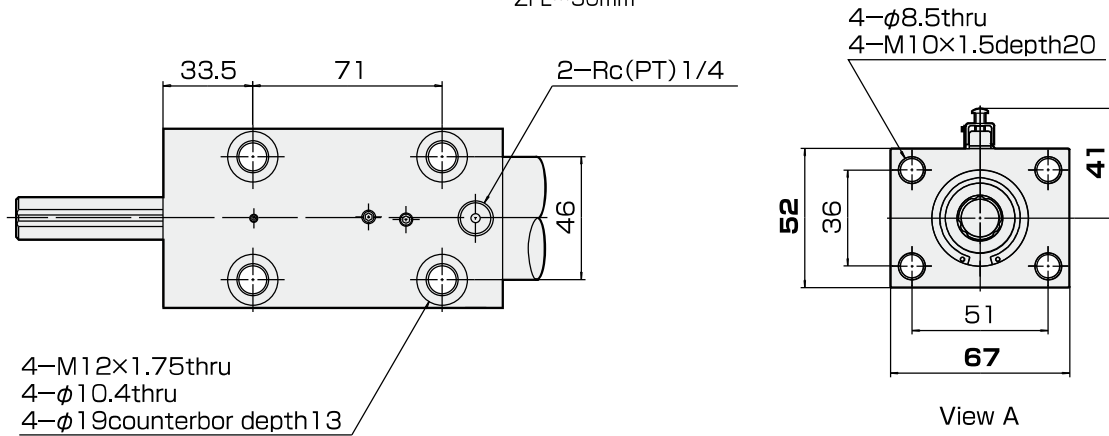
Note: Interchangeable with the previous type flange rod end ZS.

DIMENSIONS(mm) JKXB40 WITH STROKE ADJUSTER TYPE (PUSH STROKE ADJUSTMENT)

JKXB(S)–SD40–(Stroke)– ZES
ZEL

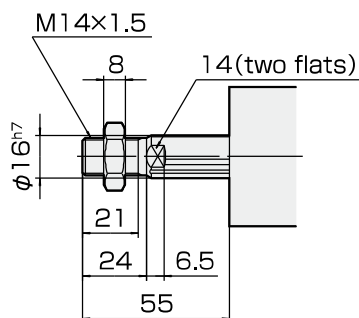
Bore Size

With Stroke Adjuster
Pull Stroke Adjustment ZFS...25mm
ZFL...50mm

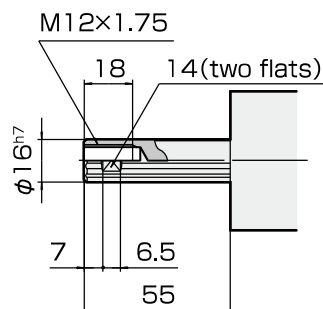


Air cushioning is available only at rod pull side.

Male Thread Rod End(WT)

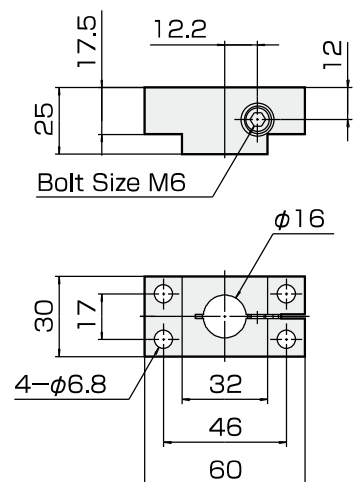


Female Thread Rod End(WS)



Flange Rod End(ZT)

Optional parts code ZT(JKX40)



Note: Interchangeable with the previous type flange rod end ZS.

JKXB

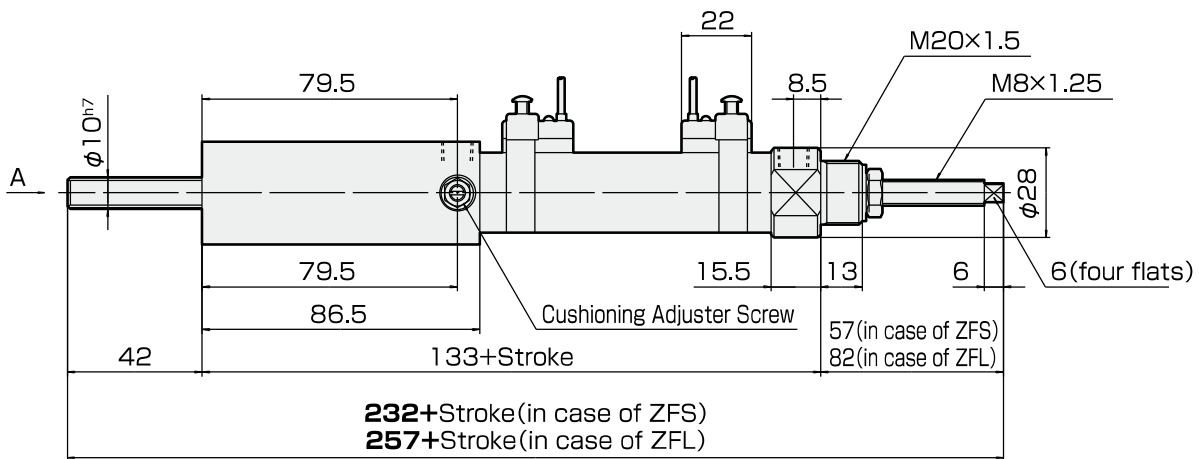
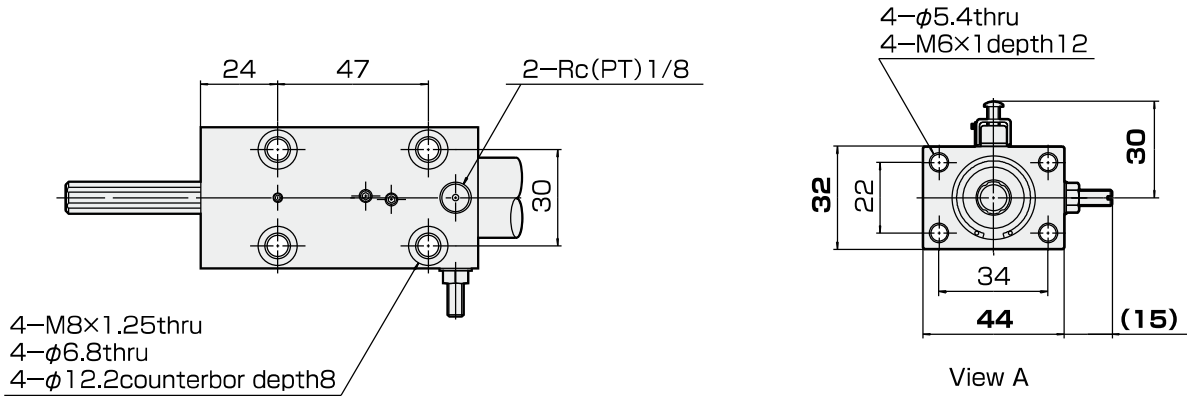
F CYLINDER Double Bearing Type

DIMENSIONS(mm) JKXB20 WITH STROKE ADJUSTER TYPE (PULL STROKE ADJUSTMENT)

JKXB(S)–SD20–(Stroke)–
ZFS
ZFL

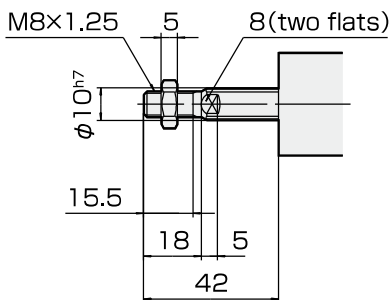
Bore Size

With Stroke Adjuster
 Pull Stroke Adjustment ZFS...25mm
 ZFL...50mm

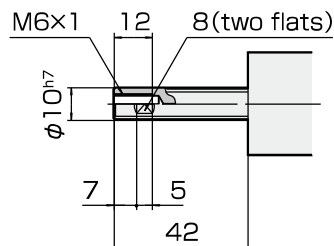


Air cushioning is available only at rod pull side.

Male Thread Rod End(WT)

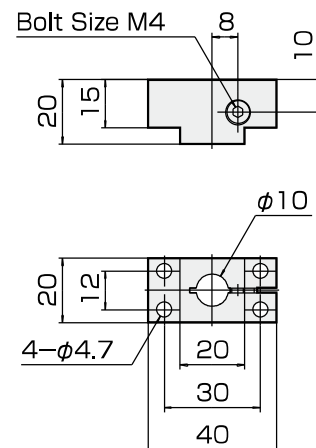


Female Thread Rod End(WS)



Flange Rod End(ZT)

Optional parts code ZT(JKX20)



Note: Interchangeable with the previous type flange rod end ZS.

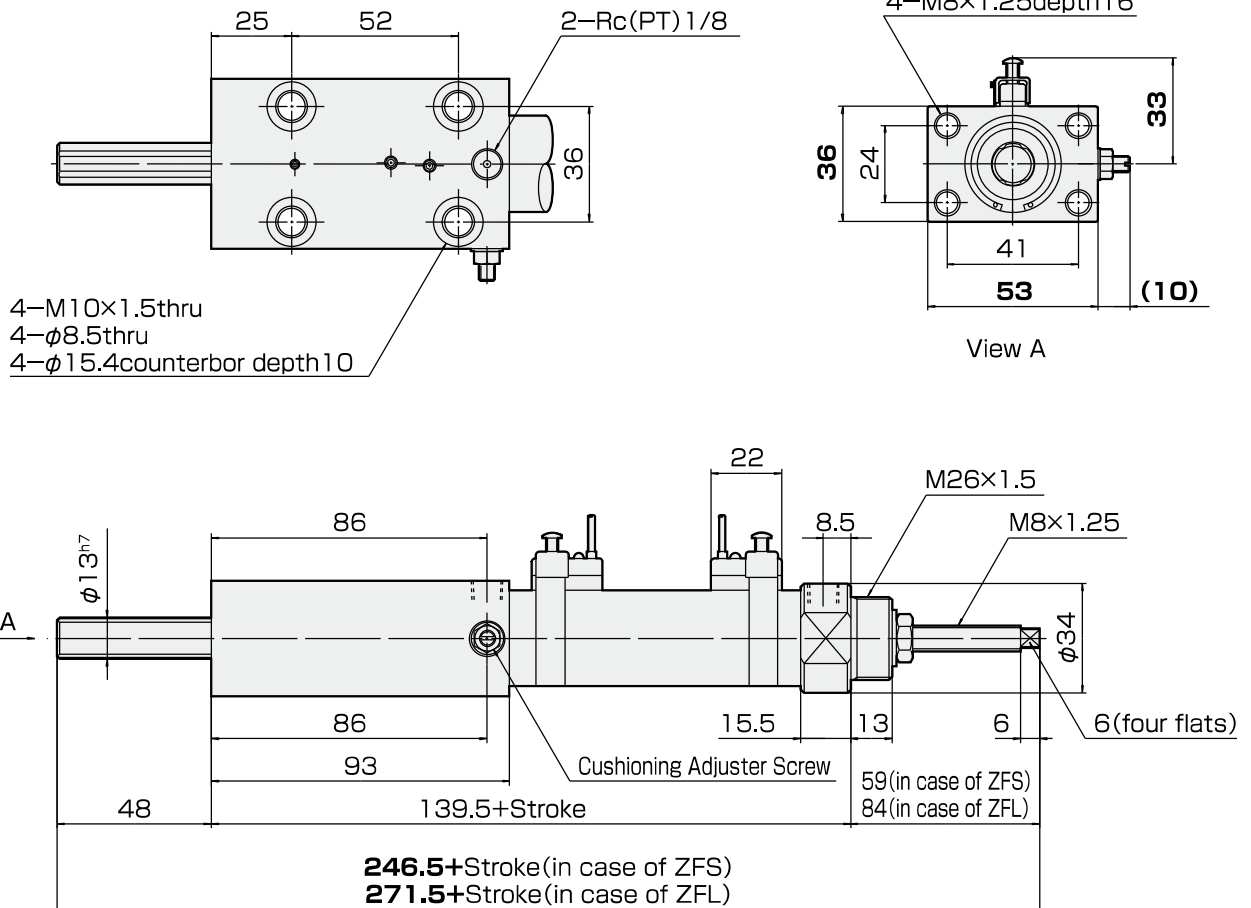
DIMENSIONS(mm) JKXB25 WITH STROKE ADJUSTER TYPE (PULL STROKE ADJUSTMENT)

JKXB(S)-SD25-(Stroke)-

Bore Size

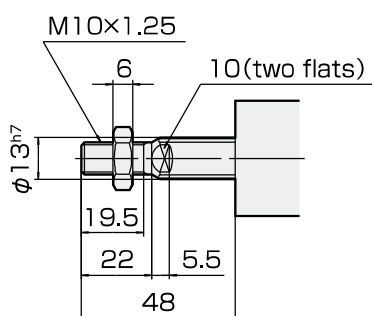
ZFS
ZFL

With Stroke Adjuster
Pull Stroke Adjustment ZFS...25mm
ZFL...50mm

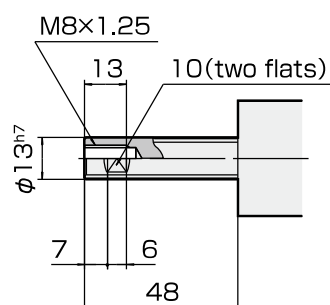


Air cushioning is available only at rod pull side.

Male Thread Rod End(WT)

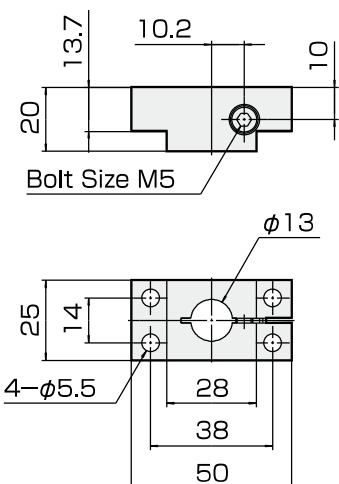


Female Thread Rod End(WS)



Flange Rod End(ZT)

Optional parts code ZT(JKX25)



Note: Interchangeable with the previous type flange rod end ZS.

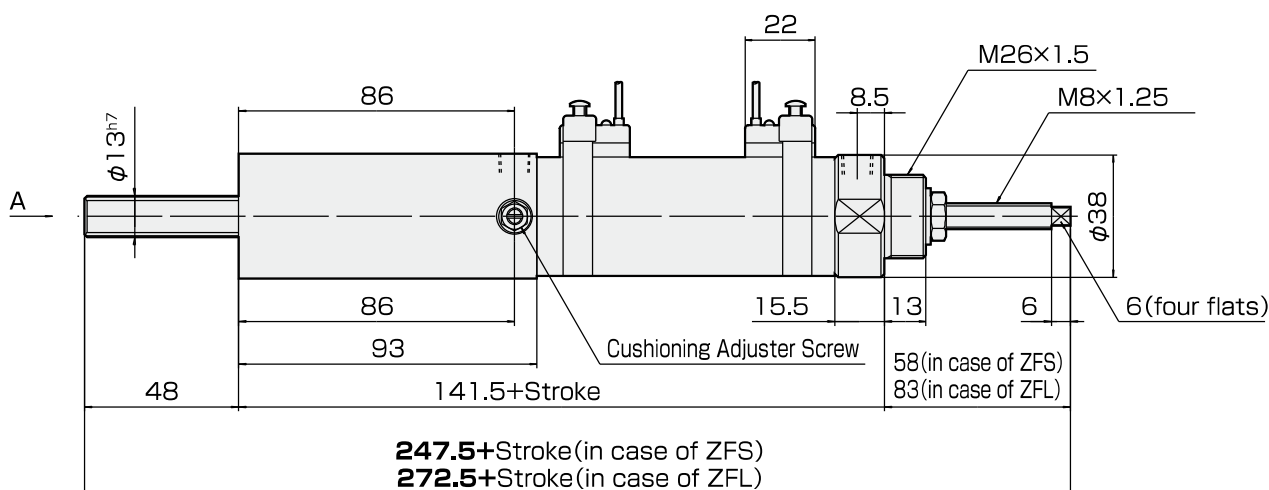
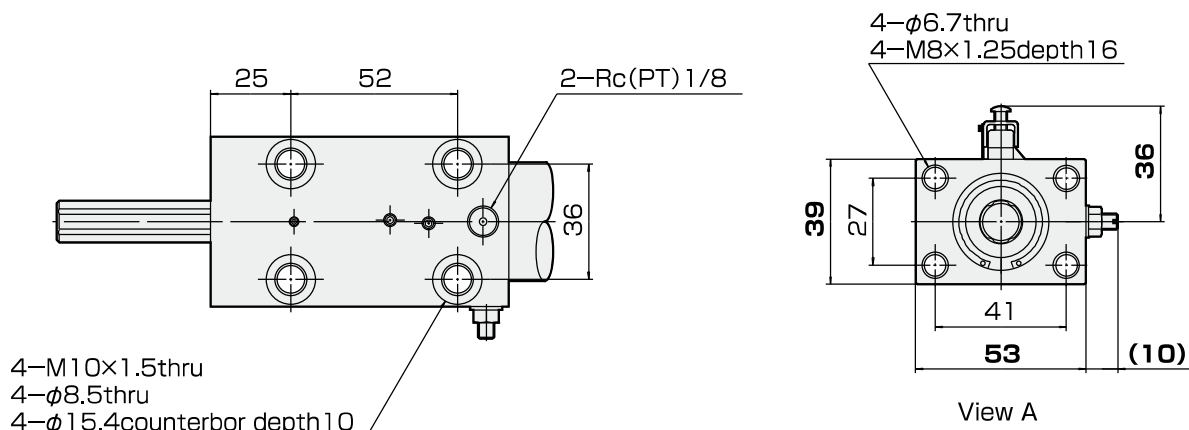
DIMENSIONS(mm) JKXB32 WITH STROKE ADJUSTER TYPE (PULL STROKE ADJUSTMENT)

JKXB(S)—SD32—(Stroke)—

Bore Size

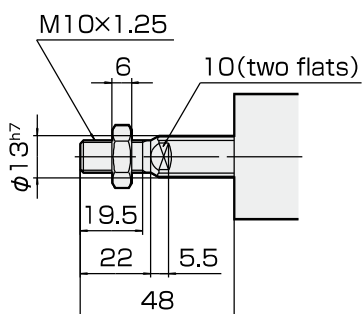
ZFS
ZFL

With Stroke Adjuster
Pull Stroke Adjustment ZFS...25mm
ZFL...50mm

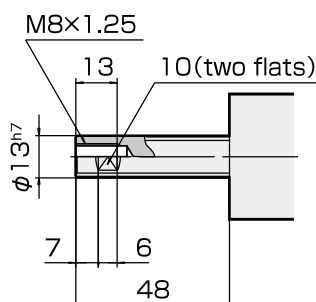


Air cushioning is available only at rod pull side.

Male Thread Rod End(WT)

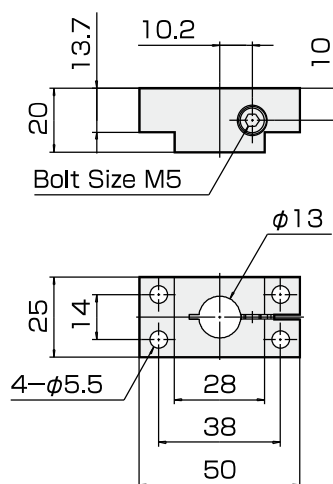


Female Thread Rod End(WS)



Flange Rod End(ZT)

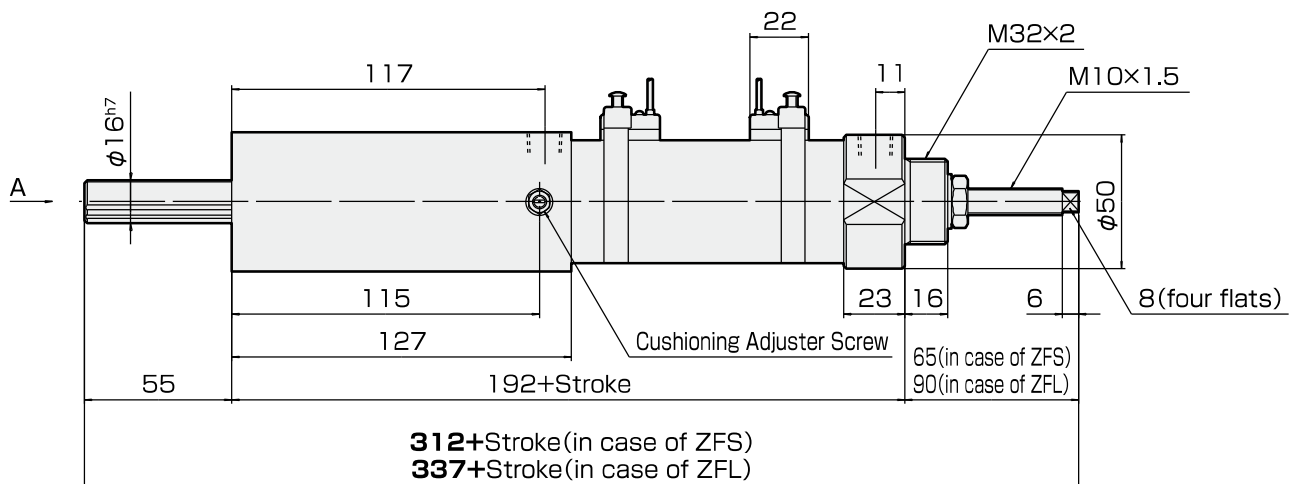
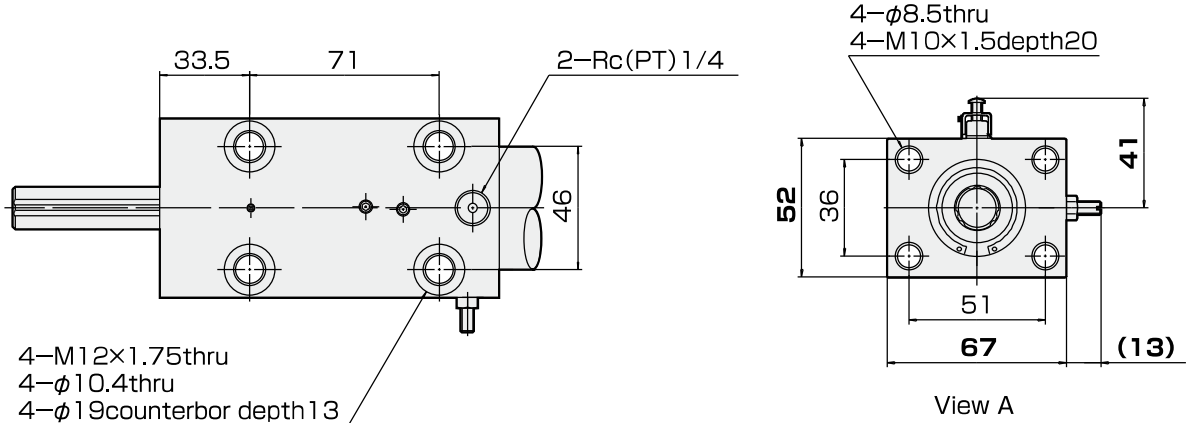
Optional parts code ZT(JKX32)



Note: Interchangeable with the previous type flange rod end ZS.

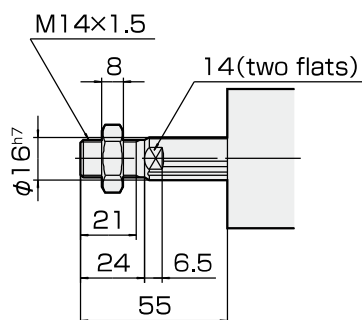
DIMENSIONS(mm) JKXB40 WITH STROKE ADJUSTER TYPE (PULL STROKE ADJUSTMENT)

JKXB(S)–SD40–(Stroke)–
└─┘ Bore Size
ZFS
ZFL
└─┘ With Stroke Adjuster
 Pull Stroke Adjustment ZFS...25mm
 ZFL...50mm

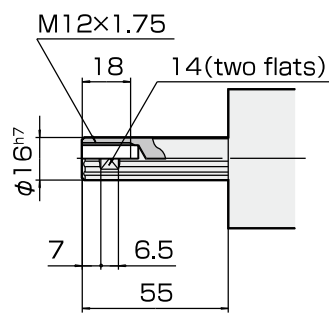


Air cushioning is available only at rod pull side.

Male Thread Rod End(WT)

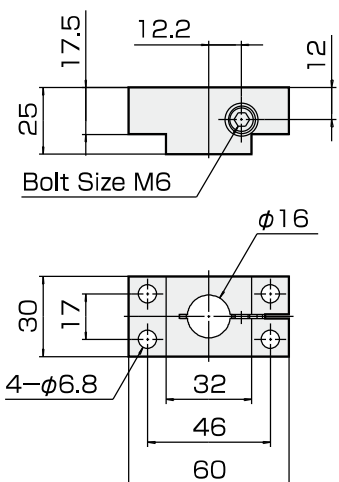


Female Thread Rod End(WS)



Flange Rod End(ZT)

Optional parts code ZT(JKX40)



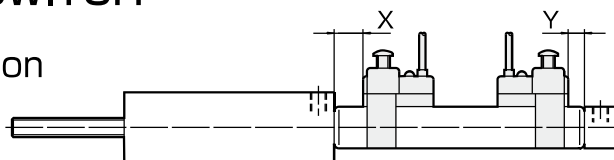
Note: Interchangeable with the previous type flange rod end ZS.

JKXB

F CYLINDER Double Bearing Type

INSTALLATION OF SWITCH

■ Switch Setting Position



RP1, 5 Switch

Unit: mm

Model	Switch Setting Position		On hold distance (ℓ)	Hysteresis (c)
	X	Y		
JKXB12	9	5	7	2 or less
JKXB16	14	5	8	
JKXB20	7	6	9	
JKXB25	7	6	9	
JKXB32	7	6	8	
JKXB40	11	13	9	

Note 1: In case of short stroke cylinder, the switch may not be turned off, or two switches may be turned on at the same time. Then, slide the switch outward from the position shown above.

Note 2: Since the values in the table are optimum, it is permitted to mount the switch apart a little from the point specified.

RP4 Switch

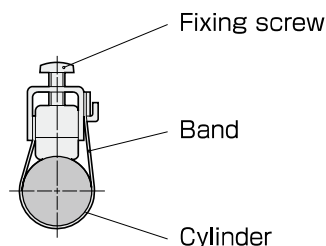
Unit: mm

Model	Switch Setting Position		On hold distance (ℓ)	Hysteresis (c)
	X	Y		
JKXB12	7	3	3	2 or less
JKXB16	12	3	3	
JKXB20	5	4	2.5	
JKXB25	5	4	3.5	
JKXB32	5	4	3	
JKXB40	9	11	3	

Explanation of hysteresis and on hold distance. page 1064

■ Switch Installation

The switch can be moved freely in the axial or peripheral direction by loosening the fixing screw. Mount the switch at the adequate position checking the operation by the indicator lamp. The tightening torque of the fixing screw shall be 0.3N·m (3kgf·cm) max.



STANDARD STROKE

Bore Size	Stroke (mm)										
	15	25	30	45	50	60	75	100	150	200	250
φ12	○		○	○	○	○	○	○	—	—	—
φ16	○		○	○	○	○	○	○	—	—	—
φ20		○	○		○		○	○	○	○	○
φ25		○			○		○	○	○	○	○
φ32		○			○		○	○	○	○	○
φ40		○			○		○	○	○	○	○

Bore Size	Stroke (mm)									Maximum Stroke Available
	300	350	400	450	500	550	600	650	700	
φ12	—	—	—	—	—	—	—	—	—	100
φ16	—	—	—	—	—	—	—	—	—	100
φ20	○	○	○	○	○	○	—	—	—	550
φ25	○	○	○	○	○	○	○	○	—	650
φ32	○	○	○	○	○	○	○	○	—	650
φ40	○	○	○	○	○	○	○	○	○	700

Those marked with a circle are standard stroke models.

For the stroke, models can be manufactured to have a stroke in increments of 1 mm. Range

For JKXB12 and 16, the minimum stroke is limited. page 908

CUSTOM MADE

To each order, we will create a drawing of the product to be delivered based on the reference drawing shown below.
Contact us for the prices, how to order, time to delivery and detailed specification.

Hollow Rod Model.....Type with the hollow rods on both ends.

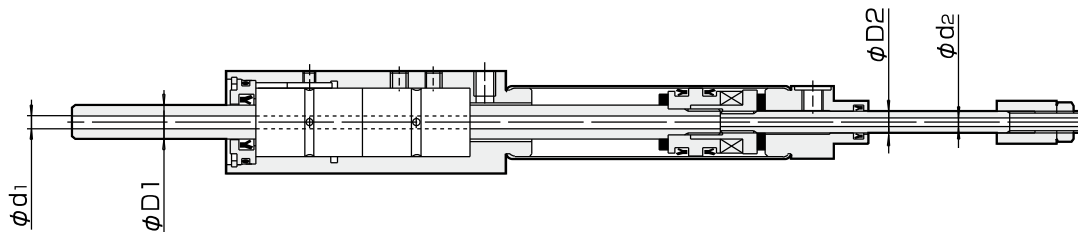
Optional.....With Stroke Adjustment Mechanism
With Bearing for Floating Mechanism
Rod End with Male/Female Thread

Application.....For Vacuum Suction, etc.

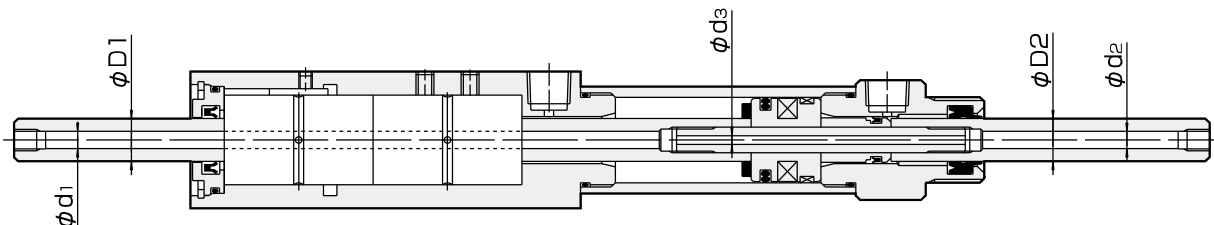
The rod and hollow diameters for respective models are as shown in the table below. (Unchangeable)

Model	Spline Rod Diameter (D1)	Stroke Adjustment Rod Diameter (D2)	Spline Rod Hollow Diameter (d1)	Stroke Adjustment Rod Hollow Diameter (d2)	Piston Shaft Hollow Diameter (d3)
JKXB12	φ 6	φ 4	φ 2.5	φ 1.5	—
JKXB16	φ 8	φ 6	φ 3	φ 2	—
JKXB20	φ 10	φ 10	φ 4	φ 4	φ 2
JKXB25	φ 13	φ 12	φ 5	φ 3	φ 3
JKXB32	φ 13	φ 12	φ 5	φ 3	φ 3
JKXB40	φ 16	φ 16	φ 7	φ 5	φ 4

JKXB12, 16



JKXB20~40



Note: Rubber cushion for the push-out side and air cushion for the draw-back side.

■MEMO■

■MEMO■

■MEMO■

■MEMO■

■MEMO■