YZG-SB/SBT/oil pressure upper flange oil circuit plate or speed control swing clamp cylinder

Pressure Range
15-70kg/cm^2

High quality seals

High quality seals are used to effectively prevent coolant and chips from entering the cylinder block.

High precision taper fit

The taper fit is adopted between the clamping arm and the piston, which not only facilitates disassembly, but also ensures the positioning accuracy, and you can freely adjust the angle of the clamping arm to meet your requirements.

Clamping arm

Flange

Piston

Angle pole
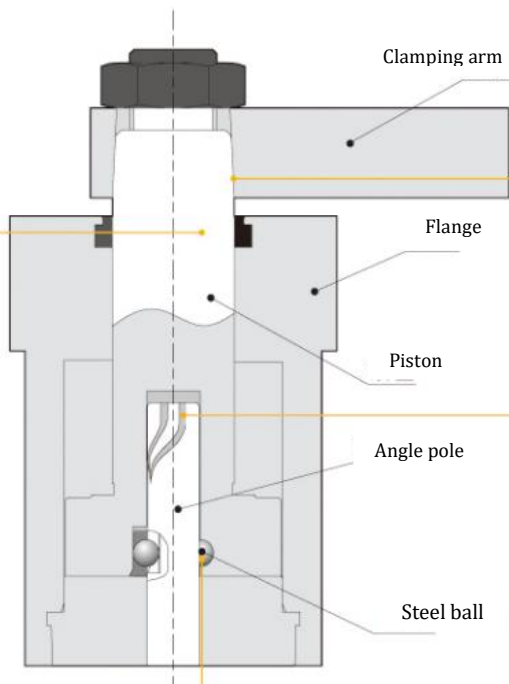
Steel ball

Point steel ball support

Three-point steel ball support mechanism is adopted to realize stable high-speed rotation.

Gothic cam groove

Gothic cam groove with large contact surface with steel ball is adopted to effectively reduce the pressure on the contact surface and rotate continuously at high speed with high frequency.

The figure shows the sectional view of the YZG-SB/SBT clamping state
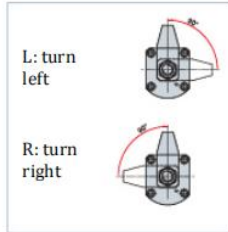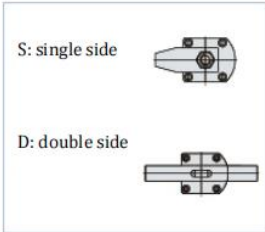
Model Representation

YZG—SB/SBT ① ② ③ ★ ④ (Example: YZG-SB25SR*90)

| ①Dimensions (refer to specification sheet) | ② Clamping arm | ③ Rotation direction (during clamping) | ④Rotation angle |

YZG-SB/SBT

① Dimensions
25
32
40
50
63

② Clamping arm
S: single side
D: double side

③ Rotation direction (during clamping)
L: turn left
R: turn right

④ Rotation angle
0: Rotation angle 0°
45: Rotation angle 45°
60: Rotation angle 60°
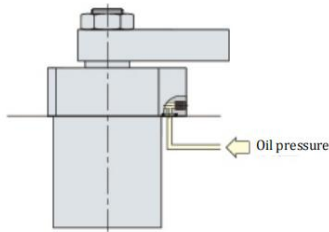90: Rotation angle 90°

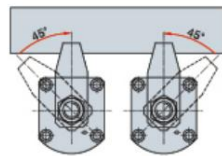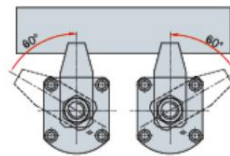## Oil Circuit Plate Method

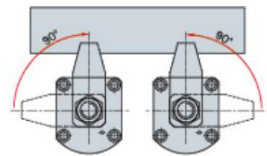Oil pressure

Plate type
The figure shows the clamping state of YZG-SB/SBT

Rotation Angle (When Clamped)

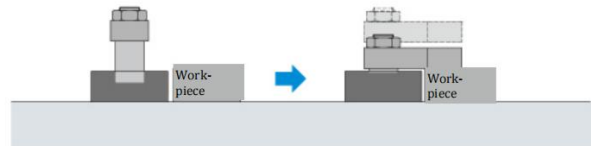45° R: turn right   L: turn left
60° R: turn right   L: turn left
90° R: turn right   L: turn left

Product Type

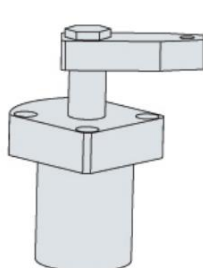Standard type

Work-piece → Work-piece

Extended stroke type

Work-piece → Work-piece
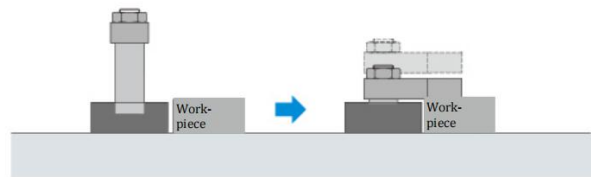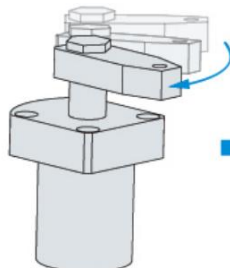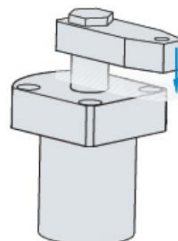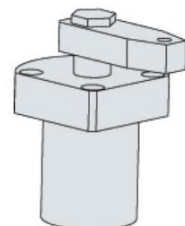
Action Description

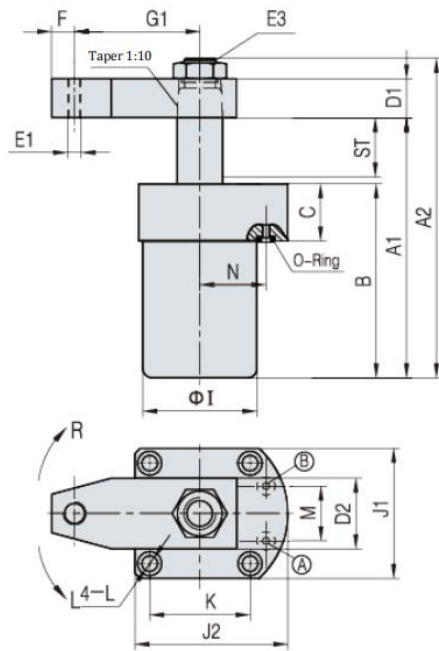Before rotation (released state) → Rotate while descending → Continue to descend after rotation ends → Action ends (clamping state)
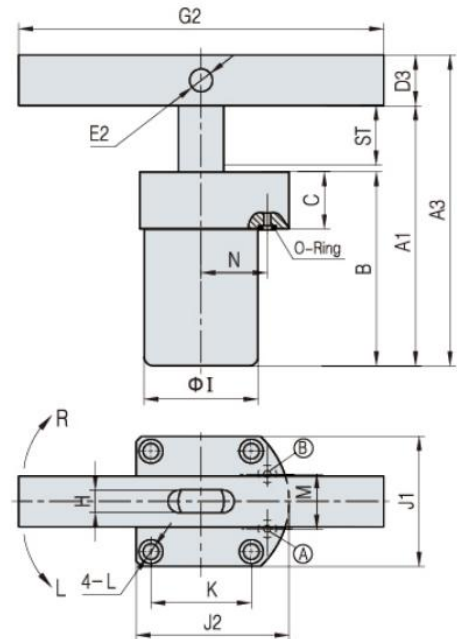
Overall Dimension
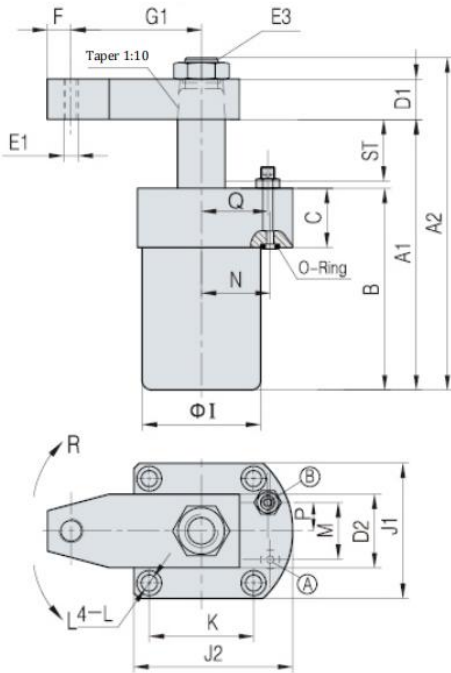
Single-sided clamping arm SB

Double-sided clamping arm SBD

A-clamping hole
B-release hole
The figure shows the released state

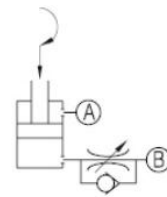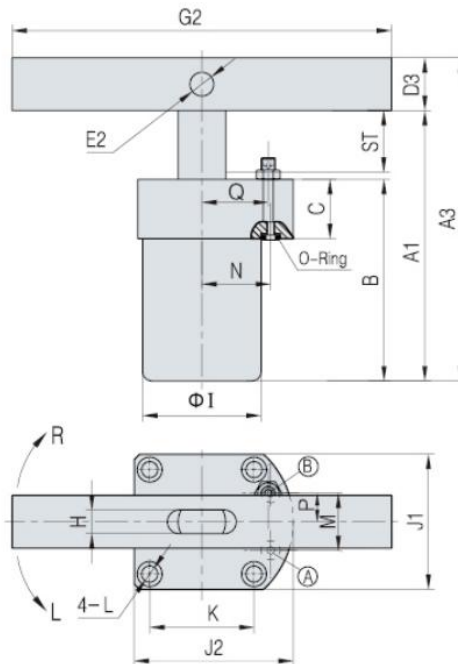| Model / Dimension	YZG-SB25	YZG-SB32		YZG-SB40		YZG-SB50		YZG-SB63	
ST:Swing/clamping	22(9/13)	26(11/15)	41(11/30)	26(11/15)	41(11/30)	30(13/17)	47(13/34)	30(13/17)	47(13/34)
A1	101	115	145	120	150	134	168	139	173
A2	(125)	(140)	(170)	(149)	(179)	(167)	(201)	(178)	(212)
A3	120	137.2	167.2	142.2	172.2	159.4	193.4	170.8	204.8
B	76	85	100	90	105	100	117	105	122
C	22	25		25		30		30	
D1	15	17		18		20		23	
D2	27	31		31		37		48	
D3	□19	□22.2		□22.2		□25.4		□31.8	
E1	M10*1.5	M10*1.5		M10*1.5		M12*1.75		M16*2	
E2	Φ8	Φ8		Φ10		Φ12		Φ15	
E3	M14*1.5	M16*1.5		M18*1.5		M20*1.5		M27*1.5	
F	10	10		10		12		15	
G1	50	55		60		65		75	
G2	140	160		160		180		200	
H	9	10		10		12		15	
ΦI	Φ45	Φ50		Φ58		Φ68		Φ80	
J1	55	57		69		75		90	
J2	64	67		81		87		106	
K	42	44		52		58		70	
L	Φ6.8-Φ10.5*6.5D	Φ6.8-Φ10.5*7D		Φ9-Φ14*9D		Φ9-Φ14*9D		Φ11-Φ18*11D	
M	20	22		26		30		38	
N	28	29		34.5		39		46	
O-Ring	P6	P6		P7		P7		P7	

Note: □ indicates square

Overall Dimension

Single-sided clamping arm SBT

Double-sided clamping arm SBTD

A-clamping hole
B-release hole
The figure shows the released state

Model / Dimension	YZG–SBT25	YZG–SBT32		YZG–SBT40		YZG–SBT50		YZG–SBT63	
ST:Swing/clamping	22(9/13)	26(11/15)	41(11/30)	26(11/15)	41(11/30)	30(13/17)	47(13/34)	30(13/17)	47(13/34)
A1	101	115	145	120	150	134	168	139	173
A2	(125)	(140)	(170)	(149)	(179)	(167)	(201)	(178)	(212)
A3	120	137.2	167.2	142.2	172.2	159.4	193.4	170.8	204.8
B	76	85	100	90	105	100	117	105	122
C	22	25		25		30		30	
D1	15	17		18		20		23	
D2	27	31		31		37		48	
D3	□19	□22.2		□22.2		□25.4		□31.8	
E1	M10*1.5	M10*1.5		M10*1.5		M12*1.75		M16*2	
E2	Φ8	Φ8		Φ10		Φ12		Φ15	
E3	M14*1.5	M16*1.5		M18*1.5		M20*1.5		M27*1.5	
F	10	10		10		12		15	
G1	50	55		60		65		75	
G2	140	160		160		180		200	
H	9	10		10		12		15	
ΦI	Φ45	Φ50		Φ58		Φ68		Φ80	
J1	55	57		69		75		90	
J2	64	67		81		87		106	
K	42	44		52		58		70	
L	Φ6.8-Φ10.5*6.5D	Φ6.8-Φ10.5*7D		Φ9-Φ14*9D		Φ9-Φ14*9D		Φ11-Φ18*11D	
M	20	22		26		30		38	
N	28	29		34.5		39		46	
P	8	10		13		15		19	
Q	26	28		34.5		37		45	
O-Ring	P6	P6		P7		P7		P7	

Note: □ indicates square

Performance Table

The clamping force varies depending on the length of the clamping arm (G1) and the oil pressure. Please comprehensively consider the clamping arm length (G1), operating oil pressure, installation size and other factors to select the appropriate swing clamp cylinder model.

Note: the longer the clamping arm of the swing clamp cylinder, the greater the force acting on the cam mechanism. Do not use a clamping arm longer than the maximum length (Max.G1)

● Interpretation of clamping force

When YZG-SB32 is used, the supplied oil pressure is 5.0MPa and the clamping arm length is 65mm, the clamping force is about 1.7kN.

F: clamping force (KN)   P: operating oil pressure (MPa)   G1: clamping arm length (mm)
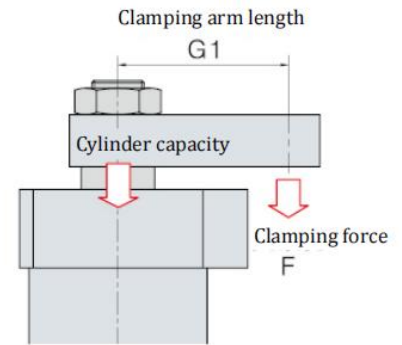
YZG–SB/SBT25

Oil pressure (MPa)	Cylinder capacity (kN)	Clamping force (kN) Clamping arm length G1 (mm)		
		50	60	70
7.0	1.7	1.3	1.2	1.1
6.5	1.5	1.1	1.1	1.0
6.0	1.4	1.1	1.0	0.9
5.5	1.3	1.0	0.9	0.9
5.0	1.2	0.9	0.9	0.8
4.5	1.1	0.8	0.8	0.7
4.0	0.9	0.7	0.6	0.6
3.5	0.8	0.6	0.6	0.5
3.0	0.7	0.5	0.5	0.5
2.5	0.6	0.5	0.4	0.4
2.0	0.5	0.4	0.4	0.3
1.5	0.4	0.3	0.3	0.3

YZG–SB/SBT32

Oil pressure (MPa)	Cylinder capacity (kN)	Clamping force (kN) Clamping arm length G1 (mm)			
		55	65	75	85
7.0	3.4	2.6	2.5	2.5	2.4
6.5	3.2	2.3	2.3	2.3	2.2
6.0	2.9	2.2	2.1	2.0	1.9
5.5	2.7	2.0	1.9	1.9	1.8
5.0	2.4	1.8	1.7	1.6	1.6
4.5	2.2	1.6	1.5	1.5	1.4
4.0	2.0	1.5	1.4	1.4	1.3
3.5	1.7	1.2	1.2	1.2	1.1
3.0	1.5	1.0	1.0	1.0	0.9
2.5	1.2	0.8	0.8	0.8	0.7
2.0	1.0	0.6	0.6	0.6	0.5
1.5	0.7	0.4	0.4	0.4	0.4

YZG–SB/SBT40

Oil pressure (MPa)	Cylinder capacity (kN)	Clamping force (kN) Clamping arm length G1 (mm)			
		60	70	80	90
7.0	6.0	4.4	4.3	4.1	4.0
6.5	5.6	4.1	4.1	4.0	3.7
6.0	5.2	3.8	3.7	3.6	3.4
5.5	4.7	3.5	3.4	3.3	3.1
5.0	4.3	3.1	3.1	3.0	2.8
4.5	3.9	2.8	2.7	2.7	2.5
4.0	3.5	2.5	2.4	2.4	2.2
3.5	3.0	2.2	2.1	2.0	1.9
3.0	2.6	1.8	1.7	1.7	1.6
2.5	2.2	1.5	1.4	1.4	1.3
2.0	1.7	1.2	1.1	1.0	1.0
1.5	1.3	0.8	0.8	0.7	0.7

YZG–SB/SBT50

Oil pressure (MPa)	Cylinder capacity (kN)	Clamping force (kN) Clamping arm length G1 (mm)			
		65	75	85	95
7.0	9.4	7.1	6.8		
6.5	8.8	6.8	6.3	5.4	
6.0	8.1	6.0	5.6	5.3	
5.5	7.4	5.5	5.3	5.1	4.3
5.0	6.7	5.0	4.8	4.7	4.2
4.5	6.1	4.4	4.3	4.3	4.0
4.0	5.4	3.9	3.9	3.7	3.6
3.5	4.7	3.3	3.4	3.3	3.0
3.0	4.0	2.8	2.8	2.7	2.7
2.5	3.4	2.3	2.3	2.2	2.1
2.0	2.7	1.7	1.8	1.8	1.6
1.5	2.0	1.1	1.3	1.3	1.1

YZG–SB/SBT63

Oil pressure (MPa)	Cylinder capacity (kN)	Clamping force (kN) Clamping arm length G1 (mm)			
		75	90	100	110
7.0	15.1	9.6	9.1	6.3	
6.5	14.0	9.3	8.9	6.2	5.8
6.0	12.9	8.8	8.3	6.0	5.4
5.5	11.8	8.1	7.5	5.9	4.9
5.0	10.8	7.4	7.0	5.8	4.7
4.5	9.7	6.6	6.2	5.6	4.4
4.0	8.6	5.9	5.5	5.3	4.3
3.5	7.5	5.1	4.7	4.6	4.2
3.0	6.5	4.4	4.1	3.8	3.6
2.5	5.4	3.5	3.4	3.1	2.9
2.0	4.3	2.6	2.5	2.3	2.4
1.5	3.2	1.9	1.7	1.5	1.5

*Precautions:

1. This figure shows the actual measured values. The clamping force at the clamping point of the clamping arm of the standard cylinder is about 65% of the theoretical value.

2. The clamping arm with a large moment of inertia may not be able to rotate due to the supplied oil pressure, flow rate, and installation state of the clamping arm.

3. This figure shows the relationship between clamping force and supplied oil pressure.

4. The clamping force indicates the clamping energy when the clamping arm is clamped at the horizontal position.

5. The clamping force varies with the length of the clamping arm. Use it with the supplied oil pressure suitable for the length of the clamping arm.

6. If you need a clamping arm other than our standard, please contact us.

Adjustment of Rotation Speed

1. Please use the flow control valve to adjust the rotation speed so that the relationship between the inertia torque of the clamping arm and the time required to rotate 90° is located below the line "——" of the curve. The time required to rotate 90° does not include the time of clamping stroke (vertical action).
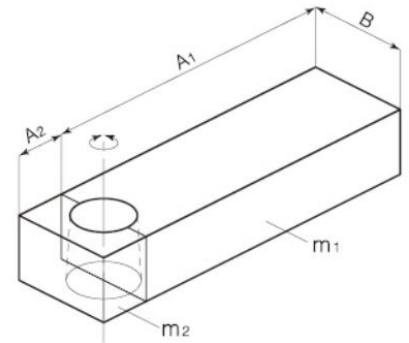
2 if a 90° rotation time shorter than the line "——" is selected, the fault will be caused by the overload of the cylinder and piston.
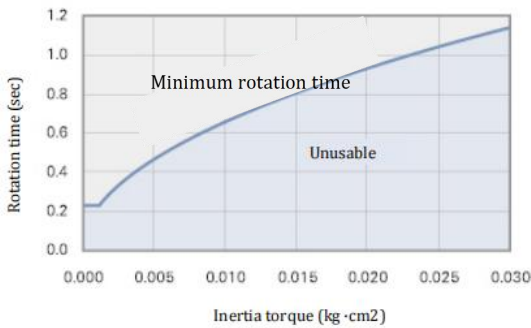
Calculation example of inertia torque:

$$I = \frac{1}{12}m_1(4A_1{}^2+B^2)+\frac{1}{12}m_2(4A_2{}^2+B^2)$$
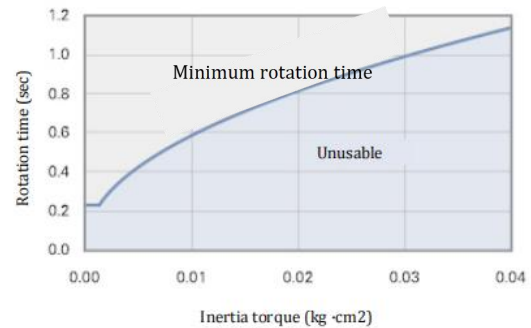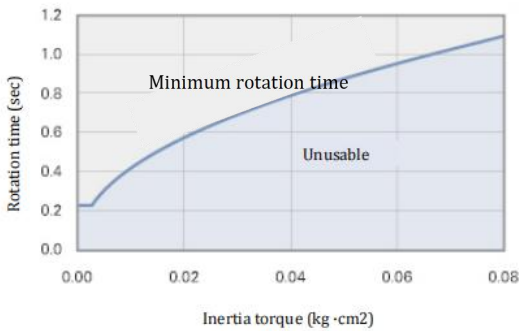
I: Inertia torque (kg • m²)

m: Mass (kg)

YZG–SB/SBT25

Minimum rotation time

Unusable

Inertia torque (kg ·cm2)

YZG-SB/SBT32

Minimum rotation time

Unusable

Inertia torque (kg ·cm2)

YZG-SB/SBT40

Minimum rotation time

Unusable

Inertia torque (kg ·cm2)

YZG–SB/SBT50

Minimum rotation time

Unusable

Inertia torque (kg ·cm2)

YZG-SB/SBT63

Minimum rotation time

Unusable

Inertia torque (kg ·cm2)