

## *Support Units*



## *FA Units*



# Sungil Support Units

**EK, EF Type Support Units**



**BK, BF Type Support Units**



**AK, AF Type Support Units**



**FK, FF Type Support Units**



Support Units

Sungil Support Units

Joint Unit

Bearing Unit

Set Collars

Lock Nut

Power Lock Series

# Characteristics of SI Support Units

The Support Units SI Machinery are precisely standardized in order to accurately maintain, firmly fix and support the rotational movement of ball screw or sliding screw that is used for power transmission of linear motion.

## Features

### Simplicity of Design and Assembly

Standardization of product allows highly effective design. Additional assembly process is not required, and the stability of assembly precision can be easily improved as bearing of the support unit is assembled at optimal preload condition. Moreover, the standardized product ensures superior compatibility.

### High Precision

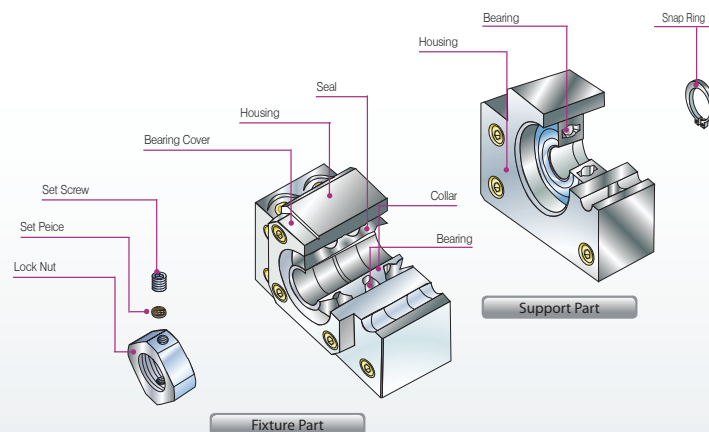
Angular contact ball bearing is precisely assembled in face-to-face duplex format. The influence by assembly error is minimized and the precision of rotation shaft is maintained as the product structure is designed to absorb parallel error between rotational shaft and guide about the center of the shaft.

### Dust-Proof Effect

The support unit is framed with oil seal to prevent the influx of fine dusts or foreign substances and thus enhances operation precision. Furthermore, it allows longtime use as grease leakage is prevented by minimizing the tolerance between the oil seal and the rotation shaft.

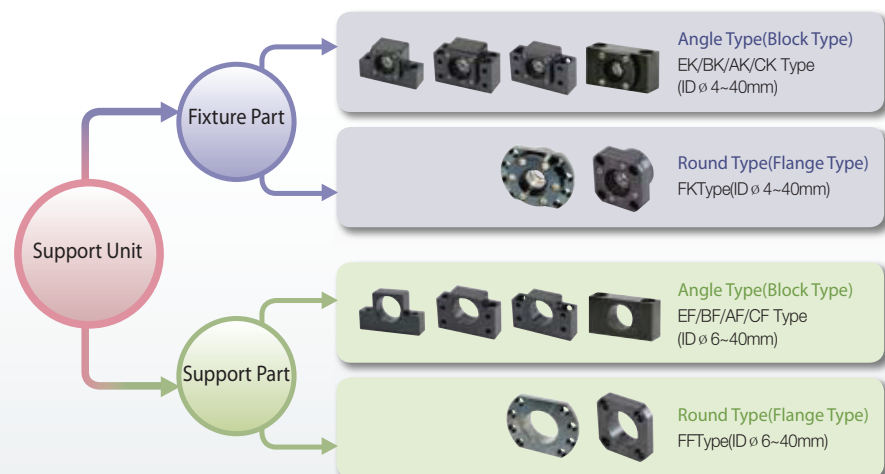
## Structure

The support unit for fixture part is assembled by angular ball bearing with high rigidity and low torque in face-to-face duplex format that is appropriate to the dynamic property of rotation shaft. In addition, it can achieve highly accurate rotation capability through precise adjustment on preload. The support unit for support part uses deep groove ball bearing. There is oil seal framed in the unit, and it prevents the grease from leaking. It prevents the influx of fine dusts or foreign substances and allows longtime use.



## Shape and Classification

There are two types of units that are available for different conditions of installation and use. One employs angle type (block type) structure where the unit is fixed on the base surface, and the other employs round type (flange type) structure where the unit is inserted into a hole for fixation. The unit is also divided into two parts depending on the position of power transmission shaft—the part for fixture (motor) on one side and the part for support on the other side.



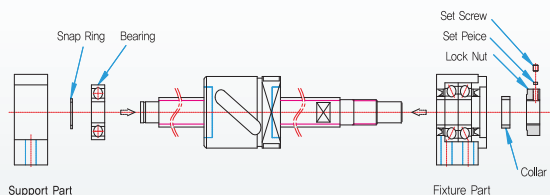
# Characteristics of SI Support Units

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## Steps to install the Support Unit

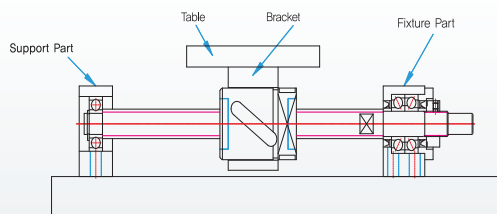
### 1. Assemble to Support Units

- 1) Connect the unit for fixture part to ball screw
  - It is not allowed to disassemble the unit as its preload has been already controlled
  - The wing part of the oil seal should not be folded when ball screw is inserted into the unit.
- 2) After inserting the ball screw into the unit, put the collar and couple and adjust the locknut. Then place the set piece in the stop screw part of the locknut and tighten the stop screw (see page 60)
  - Adhesive can be used to prevent the locknut from being loosened.
- 3) Mount the nut bracket on ball screw.
- 4) After connecting the unit ball bearing for support part to the ball screw, fix the snap ring and assemble to the housing.



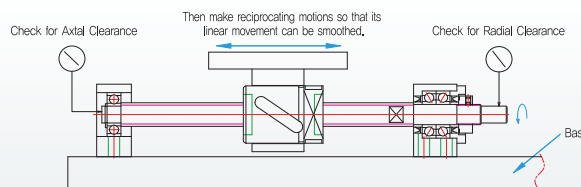
### 2. Assemble to Table and Base

- 1) Connect table to the nut bracket of ball screw.
- 2) Preassemble the support unit for fixture part to the designed position of the base.
  - When the unit for fixture part is the standard, adjust to have clearance in external diameter of the nut and internal diameter of the table or bracket.
  - When the table is the standard, adjust the height of angle type unit. For flange type, adjust to have clearance in external diameter and internal diameter.
- 3) Connect the unit housing for support part to ball screw and preassemble to the designed position of the base.



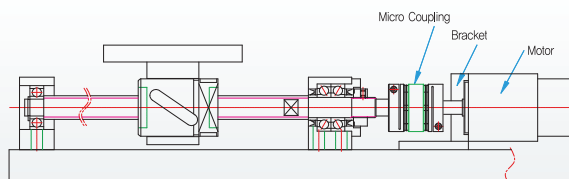
### 3. Precision of Rotation Shaft and Coupling

- 1) Move the table connected to the ball screw toward the center of the shaft in order to place the center of the shaft properly. Make alternating motion so that its linear movement can become smooth.
- 2) While measuring the tolerance toward the direction of the shaft and the vibration at the end of the rotational shaft of the ball screw, measure the center of the shaft and couple in the order of nut bracket and table, the unit for fixture part, the unit for support part and base.



### 4. Drive Motor and Assembly

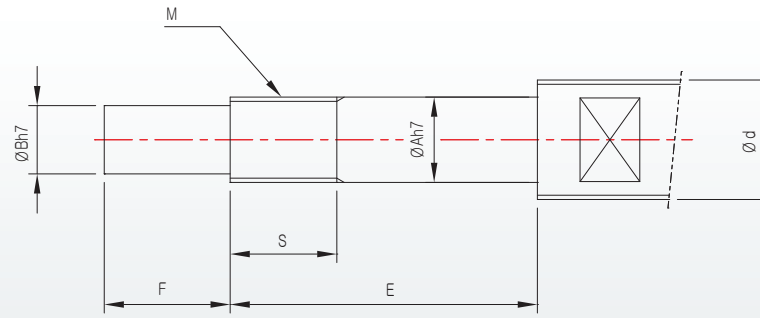
- 1) Precisely connect the bracket installed on the motor to the base by matching it with the shaft center of the ball screw.
- 2) Connect the coupling to the motor and the shaft for fixture part.
  - Careful attention is necessary during assembly as the assembly condition of the motor bracket and the coupling affects the positioning of table.
- 3) Check the precision of the shaft center by conducting enough test operation while driving the motor at slow speed.



# Characteristics of SI Support Units

## Recommendable Shape for Ball Screw

### Application of Support Unit EK, BK, AK, FK Type



Unit : mm

Model No.			OD of Ball Screw	ID of Bearing	Dimension			Meter Screw	
FK Type	EK Type	AK Type	d	A	B	E	F	M	S
FK4	EK4		6	4	3	23	5	M4×0,5	8
FK5	EK5		8	5	4	25	6	M5×0,5	8
FK6	EK6		8	6	4	30	8	M6×0,75	8
FK8	EK8(AK8)		12	8	6	35(30)	9	M8×1/0,75	10
FK10	EK10		14/15	10	8	36	15	M10×1/0,75	11
FK12	EK12		16/18	12	10	36	15	M12×1	11
FK15	EK15		20/25	15	12	49	20	M15×1	13
FK17	-		25	17	15	53	27	M17×1	14
FK20	EK20		28/30/32	20	17	59	25	M20×1	17
FK25	EK25		36	25	20	76	30	M25×1,5	20
FK30	-		40	30	25	72	38	M30×1,5	25
FK35	-		45	35	30	83	45	M35×1,5	28
FK40	-		50/55	40	35	98	50	M40×1,5	35
BK6	-		8	6	4	30	8	M6×0,75	8
BK8	-		12	8	6	35	9	M8×1/0,75	10
BK10	AK10		14/15	10	8	39	15	M10×1	16
BK12	AK12		16/18	12	10	39	15	M12×1	14
BK15	AK15		20	15	12	40	20	M15×1	12
BK17	-		25	17	15	53	23	M17×1	17
BK20	AK20		28/30/32	20	17	53	25	M20×1	16
BK25	-		36	25	20	65	30	M25×1,5	19
BK30	-		40	30	25	72	38	M30×1,5	25
BK35	-		45	35	30	83	45	M35×1,5	28
BK40	-		50/55	40	35	98	50	M40×1,5	35

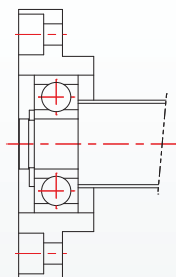
# Characteristics of SI Support Units

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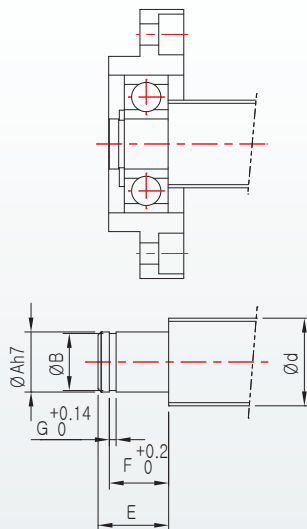
## Recommendable Shape for Ball Screw

Application of Support Unit EF, BF, AF, FF Type

FF Type



AF Type / EF Type / BF Type



Unit : mm

Model No.				OD of Ball Screw	ID of Bearing		Snap Ring Dimension		
AF Type	FF Type	EF Type	BF Type	d	A	E	B	F	G
-	FF6	EF6	BF6	8	6	9	5,6	6,9	0,9
AF8	FF8	EF8	BF8	12	6	9	5,6	6,9	0,9
AF10	FF10	EF10	BF10	14	8	10	7,6	7,9	0,9
AF10	FF10	EF10	BF10	15	8	10	7,6	7,9	0,9
AF12	FF12	EF12	BF12	16	10	11	9,6	9,15	1,15
AF12	FF12	EF12	BF12	18	10	11	9,6	9,15	1,15
AF15	FF15	EF15	BF15	20	15	13	14,3	10,15	1,15
AF15	FF15	EF15	BF15	25	15	13	14,3	10,15	1,15
-	FF17	-	BF17	25	17	16	16,2	13,15	1,15
AF20	FF20	EF20	BF20	28	20	19(16)	19	15,35(13,35)	1,35
-	FF20	EF20	BF20	30	20	19(16)	19	15,35(13,35)	1,35
-	FF20	EF20	BF20	32	20	19(16)	19	15,35(13,35)	1,35
-	FF25	-	BF25	36	25	20	23,9	16,35	1,35
-	FF30	-	BF30	40	30	21	28,6	17,75	1,75
-	-	-	BF35	45	35	22	33	18,75	1,75
-	-	-	BF40	50	40	23	38	19,95	1,95
-	-	-	BF40	55	40	23	38	19,95	1,95

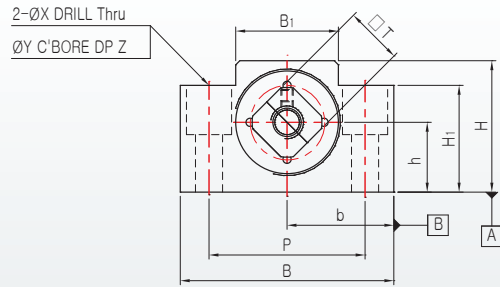
※ ( ) marks BF 20's dimension

# EK Type Support Unit

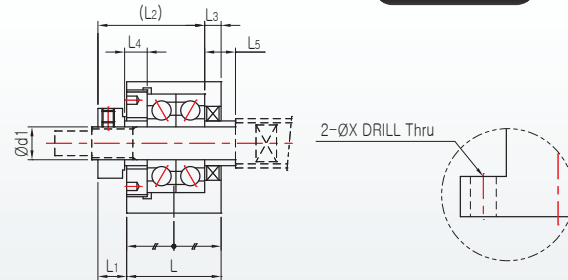
## Angle Type for Fixture



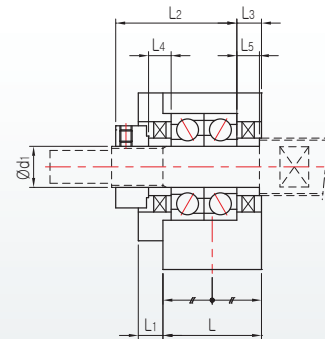
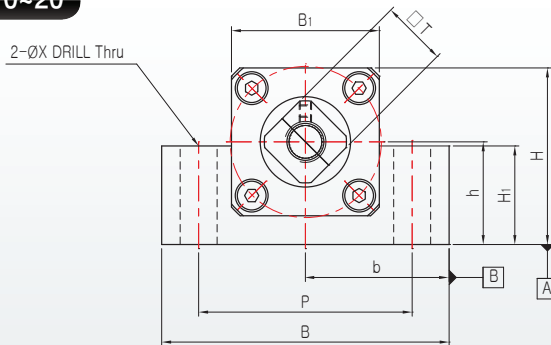
### EK 6~8



### EK 4, 5



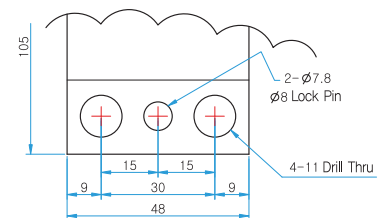
### EK 10~20



### Note

1. Installation can be conducted based on the surface of A and B. Please, use the spacer of accurate size when adjustment of height or length is necessary.
2. It is not allowed to disassemble the support unit as the preload of the bearing has been already controlled.
3. Precise amount of grease is filled in the support unit.
4. EK-4~EK-5 general type is used radial ball bearing and in small axial load.
5. Please refer to page 55 about bearing type and characteristic according to Support Unit grade
6. Please refer to page 60 about attachment torque of the lock nut.

### EK 25 Reference

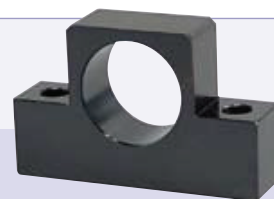


Unit : mm

Model No.	d <sub>1</sub>	L	L <sub>1</sub>	L <sub>2</sub>	L <sub>3</sub>	B	H	b±0.02	h±0.02	B <sub>1</sub>	H <sub>1</sub>	P	X	Y	Z	Collar Size		□ T	Mass(g)
																L <sub>4</sub>	L <sub>5</sub>		
EK4	4	15	5.5	18.5	2	34	19	17	10	18	7	26	4.5	-	-	3.5	3.5	10	50
EK5	5	16.5	6.5	19.5	3.5	36	21	18	11	20	8	28	4.5	-	-	4.5	4.5	11	68
EK6	6	20	5.5	22	3.5	42	25	21	13	18	20	30	5.5	9.5	11	5	7	12	120
EK8	8	23	7	26	4	52	32	26	17	25	26	38	6.6	11	12	5.5	7.5	14	230
EK10	10	24	6	29.5	6	70	43	35	25	36	24	52	9	-	-	5.5	5.5	16	430
EK12	12	24	6	29.5	6	70	43	35	25	36	24	52	9	-	-	5.5	5.5	19	420
EK15	15	25	6	36	5	80	50	40	30	41	25	60	11	-	-	10	10	22	530
EK20	20	42	10	50	10	95	58	47.5	30	56	25	75	11	-	-	11	11	30	1310
EK25	25	48	13	59	14	105	68	52.5	35	66	25	85	(Refer to Drawing)			14	14	35	1950

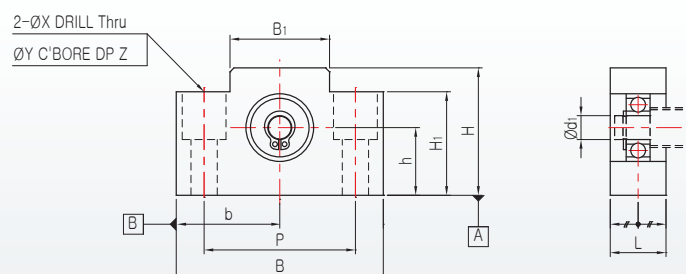
# EF Type Support Unit

## Angle Type for Support

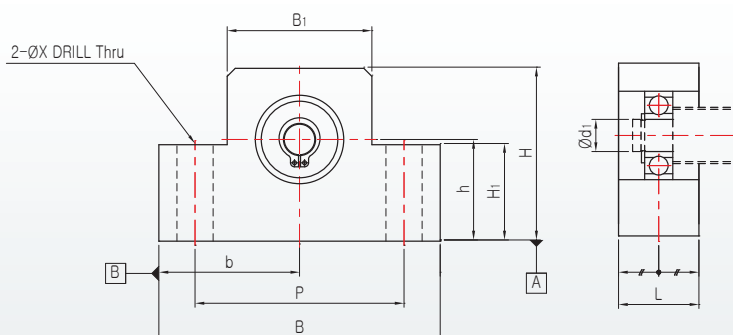


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### EF 6 ~ 8



### EF 10 ~ 25



### Note

1. Installation can be conducted based on the surface of A and B. Please, use the spacer of accurate size when adjustment of height or length is necessary.



Unit : mm

Model No.	d <sub>1</sub>	L	B	H	b±0,02	h±0,02	B <sub>1</sub>	H <sub>1</sub>	P	X	Y	Z	Mess(g)	Bearing	Snap Ring
EF6	6	12	42	25	21	13	18	20	30	5,5	9,5	11	60	606ZZ	C6
EF8	6	14	52	32	26	17	25	26	38	6,6	11	12	120	606ZZ	C6
EF10	8	20	70	43	35	25	36	24	52	9	-	-	300	608ZZ	C8
EF12	10	20	70	43	35	25	36	24	52	9	-	-	280	6000ZZ	C10
EF15	15	20	80	50	40	30	41	25	60	9	-	-	320	6002ZZ	C15
EF20	20	26	95	58	47,5	30	56	25	75	11	-	-	570	6204ZZ	C20
EF25	25	30	105	68	52,5	35	66	25	85	11	-	-	880	6205ZZ	C25



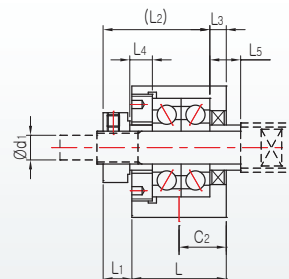
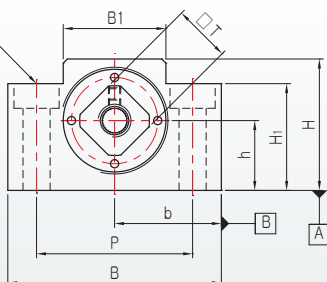
# BK Type Support Unit

## Angle Type for Fixture



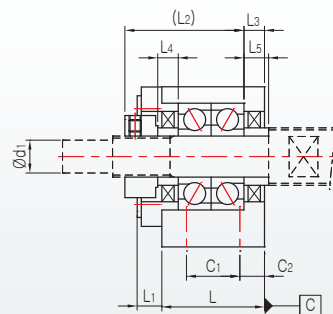
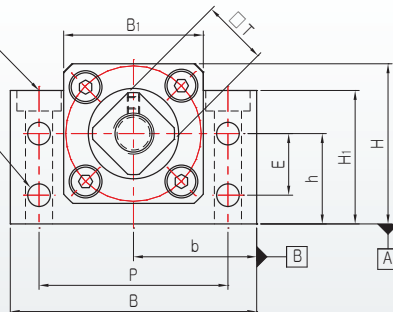
### BK 6 ~ 8

2- $\varnothing$ X DRILL Thru  
 $\varnothing$ Y C'BORE DP Z



### BK10~ 40

4- $\varnothing$ X DRILL Thru  
 $\varnothing$ Y C'BORE DP Z  
4- $\varnothing$ d2 DRILL Thru



### Note

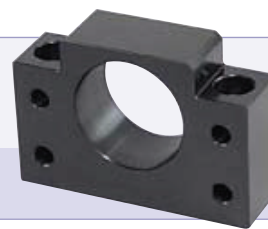
1. Installation can be conducted based on the surface of A and B. Please, use the spacer of accurate size when adjustment of height or length is necessary.
2. It is not allowed to disassemble the support unit as the preload of the bearing has been already controlled.
3. Precise amount of grease is filled in the support unit.
4. Tighten the setscrew after connecting the locknut to ball screw and performing adjustment.
5. Please refer to page 55 about bearing type and characteristic according to Support Unit grade
6. Please refer to page 60 about attachment torque of the lock nut.

Unit : mm

Model No.	d <sub>1</sub>	L	L <sub>1</sub>	L <sub>2</sub>	L <sub>3</sub>	B	H	b $\pm$ 0.02	h $\pm$ 0.02	B <sub>1</sub>	H <sub>1</sub>	E	P	C <sub>1</sub>	C <sub>2</sub>	d <sub>2</sub>	X	Y	Z	Collar Size		□T	Mess(g)
																				L <sub>4</sub>	L <sub>5</sub>		
BK6	6	23	5	24	4	52	32	26	17	25	26	-	38	-	11.5	-	6.6	11	6	5	5	12	230
BK8	8	23	7	26	4	52	32	26	17	25	26	-	38	-	11.5	-	6.6	11	6	5.5	7.5	14	230
BK10	10	25	5	29	5	60	39	30	22	34	32.5	15	46	13	6	5.5	6.6	10.8	5	5	5	16	360
BK12	12	25	5	29	5	60	43	30	25	34	35	18	46	13	6	5.5	6.6	10.8	6	5	5	19	390
BK15	15	27	6	32	6	70	48	35	28	40	38	18	54	15	6	5.5	6.6	10.8	6	6	6	22	530
BK17	17	35	9	44	7	86	64	43	39	50	55	28	68	19	8	6.6	9	14	8.5	7	7	24	1270
BK20	20	35	8	43	8	88	60	44	34	52	50	22	70	19	8	6.6	9	14	8.5	8	8	30	1650
BK25	25	42	12	54	9	106	80	53	48	64	70	33	85	22	10	9	11	17.5	11	9	9	35	2310
BK30	30	45	14	61	9	128	89	64	51	76	78	33	102	23	11	11	14	20	13	9	9	40	3330
BK35	35	50	14	67	12	140	96	70	52	88	79	35	114	26	12	11	14	20	13	12	12	50	4380
BK40	40	61	18	76	15	160	110	80	60	100	90	37	130	33	14	14	18	26	17.5	15	15	50	6670

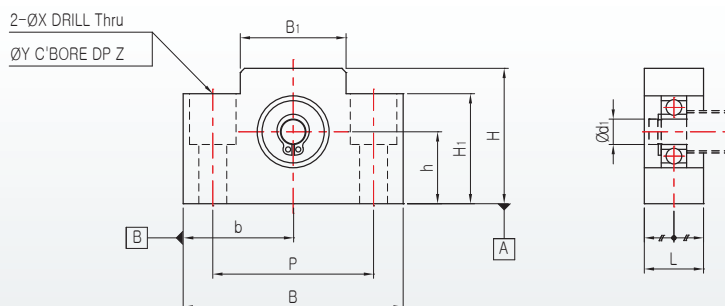
# BF Type Support Unit

## Angle Type for Support

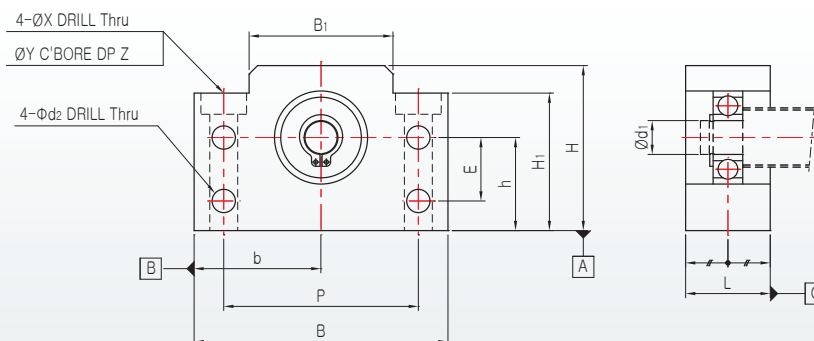


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### BF6~8



### BF10~40



### Note

1. Installation can be conducted based on the surface of A and B. Please, use the spacer of accurate size when adjustment of height or length is necessary.



Unit : mm

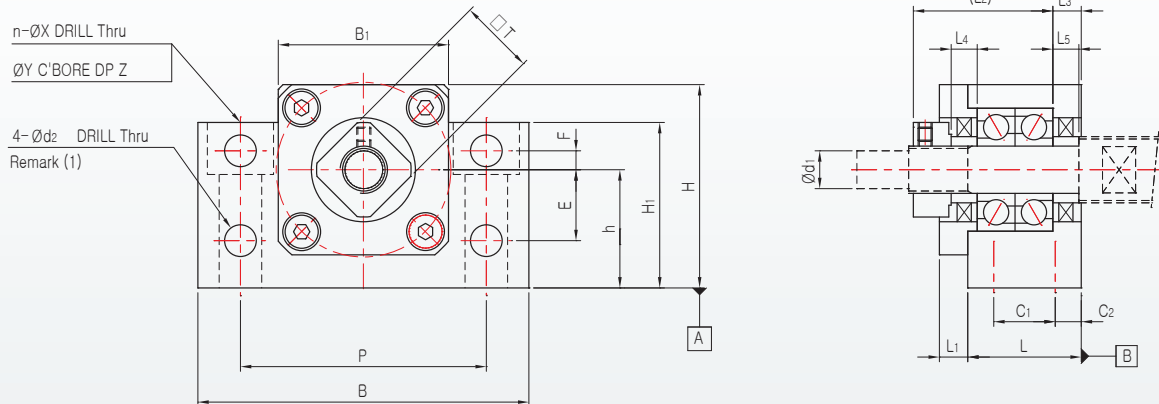
Model No.	d <sub>1</sub>	L	B	H	b±0.02	h±0.02	B <sub>1</sub>	H <sub>1</sub>	E	P	d <sub>2</sub>	X	Y	Z	Mess(g)	Bearing	Snap Ring
BF6/8	6	14	52	32	26	17	25	26	-	38	-	6,6	11	12	120	606ZZ	C6
BF10	8	20	60	39	30	22	34	32,5	15	46	5,5	6,6	10,8	5	260	608ZZ	C8
BF12	10	20	60	43	30	25	34	35	18	46	5,5	6,6	10,8	6,5	270	6000ZZ	C10
BF15	15	20	70	48	35	28	40	38	18	54	5,5	6,6	10,8	6,5	310	6002ZZ	C15
BF17	17	23	86	64	43	39	50	55	28	68	6,6	9	14	8,5	680	6203ZZ	C17
BF20	20	26	88	60	44	34	52	50	22	70	6,6	9	14	8,5	710	6004ZZ	C20
BF25	25	30	106	80	53	48	64	70	33	85	9	11	17,5	11	1340	6205ZZ	C25
BF30	30	32	128	89	64	51	76	78	33	102	11	14	20	13	1880	6206ZZ	C30
BF35	35	32	140	96	70	52	88	79	35	114	11	14	20	13	2080	6207ZZ	C35
BF40	40	37	160	110	80	60	100	90	37	130	14	18	26	17,5	3100	6208ZZ	C40

# AK Type Support Unit

## Angle Type for Fixture



AK 8 ~ 20



Remark (1) : AK20 is no Hole

### Note

1. Installation can be conducted based on the surface of A and B. Please, use the spacer of accurate size when adjustment of height or length is necessary.
2. It is not allowed to disassemble the support unit as the preload of the bearing has been already controlled.
3. Precise amount of grease is filled in the support unit.
4. Tighten the setscrew after connecting the locknut to ball screw and performing adjustment.
5. Please refer to page 55 about bearing type and characteristic according to Support Unit grade
6. Please refer to page 60 about attachment torque of the lock nut.

Unit : mm

Model No.	d <sub>1</sub>	L	L <sub>1</sub>	L <sub>2</sub>	L <sub>3</sub>	B	H	h±0,02	B <sub>1</sub>	H <sub>1</sub>	E	F	P	C <sub>1</sub>	C <sub>2</sub>	d <sub>2</sub>	n	X	Y	Z	Collar Size		□T	Mess(g)
																					L <sub>4</sub>	L <sub>5</sub>		
AK8	8	20	3	24	4	52	32	17	25	26	10	4	38	-	10	5,5	2	6,6	11	12	4	4	14	190
AK10	10	24	6	29,5	6	70	43	25	36	35	15	4	52	-	12	6,6	2	9	14	11	5,5	5,5	16	450
AK12	12	24	6	29,5	6	70	43	25	36	35	15	4	52	-	12	6,6	2	9	14	11	5,5	5,5	19	440
AK15	15	25	6	36	5	80	50	30	41	40	15	4	60	-	12,5	6,6	2	11	17	15	10	10	22	570
AK20	20	42	10	50	10	95	58	30	56	45	-	-	75	22	10	-	4	11	17	15	11	11	30	1400

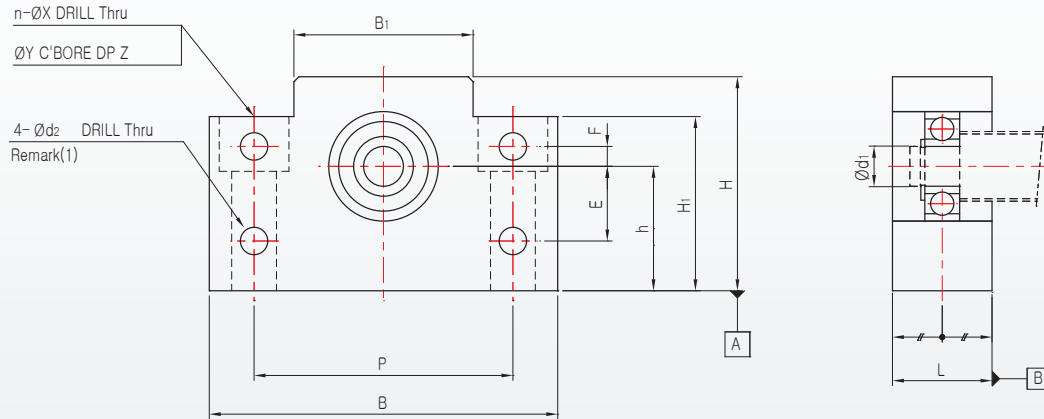
# AF Type Support Unit

## Angle Type for Support



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AF 8 ~ 20



Remark (1) : AF20 is no Hole

### Note

1. Installation can be conducted based on the surface of A and B. Please, use the spacer of accurate size when adjustment of height or length is necessary.

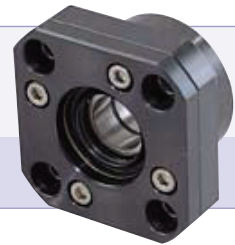


Unit : mm

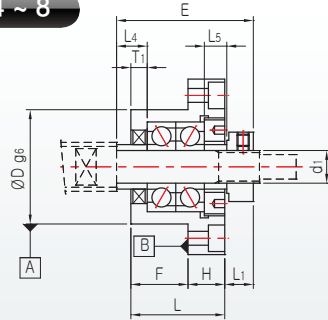
Model No.	d <sub>1</sub>	L	B	H	h±0.02	B <sub>1</sub>	H <sub>1</sub>	E	F	P	d <sub>2</sub>	X	Y	Z	Mess(g)	Bearing	Snap Ring
AF8	6	15	52	32	17	25	26	10	4	38	5.5	6.6	11	12	130	606ZZ	C6
AF10	8	20	70	43	25	36	35	15	4	52	6.6	9	14	11	320	608ZZ	C8
AF12	10	20	70	43	25	36	35	15	4	52	6.6	9	14	11	300	6000ZZ	C10
AF15	15	20	80	50	30	41	40	15	4	60	6.6	9	14	11	370	6002ZZ	C15
AF20	20	26	95	58	30	56	45	-	-	75	-	11	17	15	660	6204ZZ	C20

# FK Type Support Unit

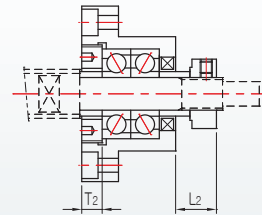
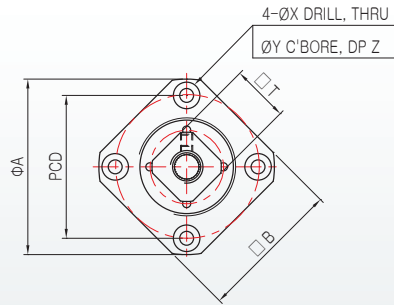
## Round Type for Fixture



### FK 4 ~ 8

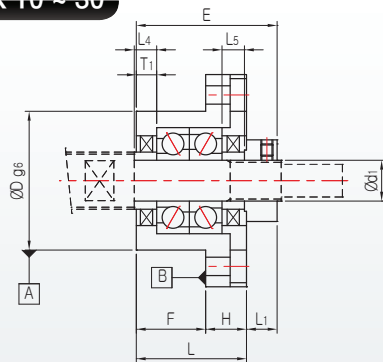


[ How to install A ]

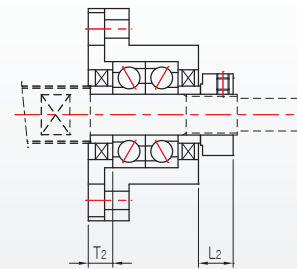
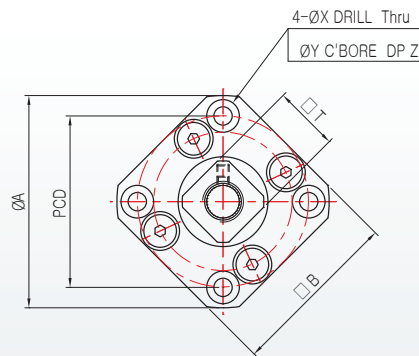


[ How to install B ]

### FK 10 ~ 30



[ How to install A ]



[ How to install B ]

### Note

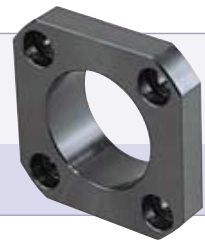
1. Installation can be conducted based on the surface of A and B. Please, use the spacer of accurate size when adjustment of height or length is necessary.
2. It is not allowed to disassemble the support unit as the preload of the bearing has been already controlled.
3. Precise amount of grease is filled in the support unit.
4. Tighten the setscrew after connecting the locknut to ball screw and performing adjustment.
5. Please refer to page 55 about bearing type and characteristic according to Support Unit grade
6. Please refer to page 60 about attachment torque of the lock nut.

Unit : mm

Model No.	d <sub>1</sub>	L	H	F	E	D	A	PCD	□B	How to install A		How to install B		X	Y	Z	Collar Size		□T	Mess(g)
										L <sub>1</sub>	T <sub>1</sub>	L <sub>2</sub>	T <sub>2</sub>				L <sub>4</sub>	L <sub>5</sub>		
FK4	4	15	6	9	22	18	32	24	25	5,5	2	6,5	3	3,4	6	4	3,5	3,5	10	40
FK5	5	16,5	6	10,5	24	20	34	26	26	6,5	3,5	6	3	3,4	6,5	4	4,5	4,5	11	50
FK6	6	20	7	13	29	22	36	28	28	5,5	3,5	8,5	4,5	3,4	6,5	4	7	5	12	65
FK8	8	23	9	14	33,5	28	43	35	35	7	4	10	5	3,4	6,5	4	7,5	5,5	14	125
FK10	10	27	10	17	29,5	34	52	42	42	7,5	5	8,5	6	4,5	8	4	5,5	5,5	16	200
FK12	12	27	10	17	29,5	36	54	44	44	7,5	5	8,5	6	4,5	8	4	5,5	5,5	19	225
FK15	15	32	15	17	36	40	63	50	52	10	6	12	8	5,5	9,5	6	10	10	22	340
FK17	17	45	22	23	46	50	77	62	61	10	9	13	12	6,6	11	10	9	9	24	770
FK20	20	52	22	30	50	57	85	70	68	8	10	12	14	6,6	11	10	11	11	30	1065
FK25	25	57	27	30	60	63	98	80	79	13	10	20	17	9	15	13	15	15	35	1465
FK30	30	62	30	32	61	75	117	95	93	11	12	17	18	11	17,5	15	9	9	40	2300

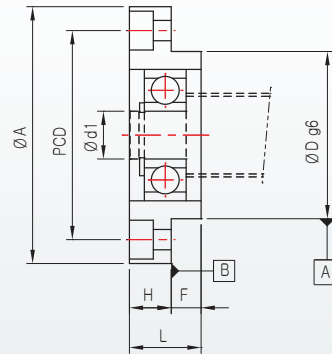
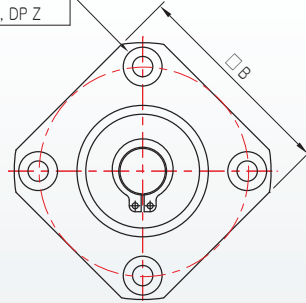
# FF Type Support Unit

## Round Type for Support



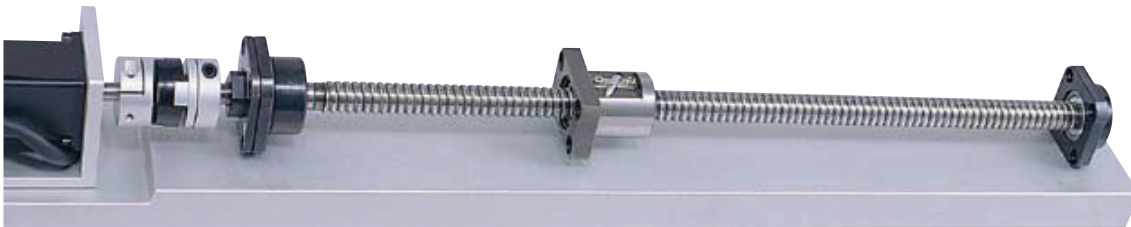
FF 6 ~ 30

4-ØX DRILL, THRU  
ØY C'BORE, DP Z



### Note

1. Installation can be conducted based on the surface of A and B. Please, use the spacer of accurate size when adjustment of height or length is necessary.



Unit : mm

Model No.	d <sub>i</sub>	L	H	F	D	A	PCD	B	X	Y	Z	Mess(g)	Bearing	Snap Ring
FF6-8	6	10	6	4	22	36	28	28	3,4	6,5	3	30	606ZZ	C6
FF10	8	12	7	5	28	43	35	35	3,4	6,5	4	60	608ZZ	C8
FF12	10	15	7	8	34	52	42	42	4,5	8	4	100	6000ZZ	C10
FF15	15	17	9	8	40	63	50	52	5,5	9,5	5,5	140	6002ZZ	C15
FF17	17	20	11	9	50	77	62	61	6,5	11	6,5	290	6203ZZ	C17
FF20	20	20	11	9	57	85	70	68	6,6	11	6,5	380	6204ZZ	C20
FF25	25	24	14	10	63	98	80	79	9	14	8,5	590	6205ZZ	C25
FF30	30	27	18	9	75	117	95	93	11	17,5	11	930	6206ZZ	C30

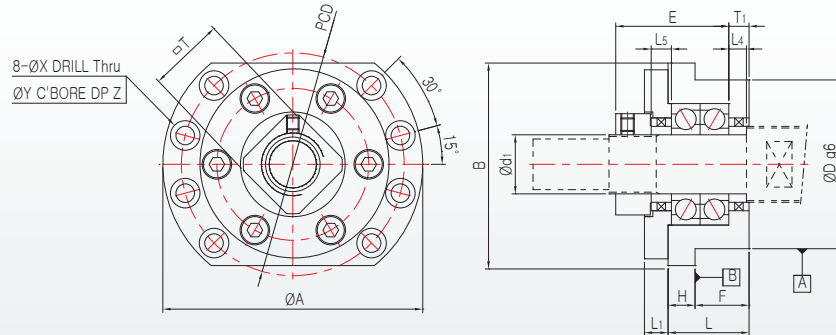
# FK/FF Type Support Unit

## Round Type for Fixture

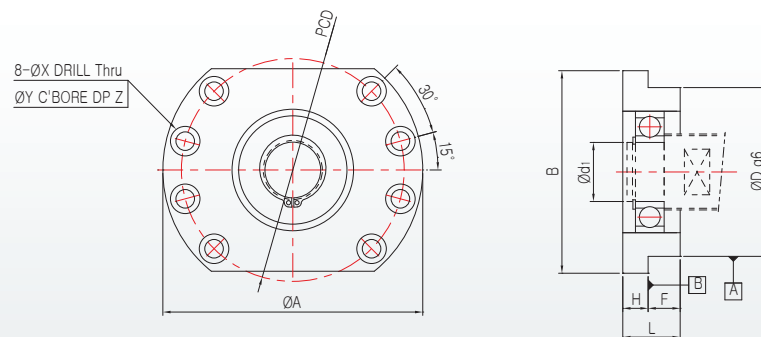


Please, download CAD DATA on [www.sungilfa.com](http://www.sungilfa.com)

### FK 35 ~ 40



### FF 35 ~ 40



### Note

1. Installation can be conducted based on the surface of A and B. Please, use the spacer of accurate size when adjustment of height or length is necessary.
2. It is not allowed to disassemble the support unit as the preload of the bearing has been already controlled.
3. Precise amount of grease is filled in the support unit.
4. Tighten the setscrew after connecting the locknut to ball screw and performing adjustment.
5. Please refer to page 55 about bearing type and characteristic according to Support Unit grade
6. Please refer to page 60 about attachment torque of the lock nut.

Unit : mm

Model No.	d <sub>1</sub>	L	H	F	E	D	A	PCD	B	L <sub>1</sub>	T <sub>1</sub>	X	Y	Z	Collar Size		□T	Mess(g)
															L <sub>4</sub>	L <sub>5</sub>		
FK35	35	48	16	32	67	100	154	132	120	14	12	11	17.5	11	12	12	50	4080
FK40	40	61	18	43	76	120	176	150	128	18	16	14	20	13	15	15	50	6750

Unit : mm

Model No.	d <sub>1</sub>	L	H	F	D	A	PCD	B	X	Y	Z	Bearing	Snap Ring	Mess(g)
FF35	35	34	15	19	100	154	132	120	11	17.5	11	6207ZZ	C35	2050
FF40	40	36	18	18	120	176	150	128	14	20	13	6208ZZ	C40	3050

# CK/CF Type Support Unit

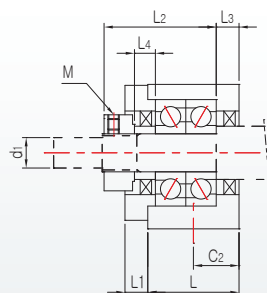
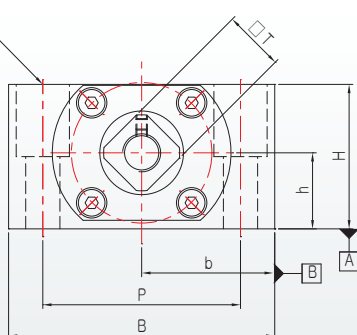


## Low Center Type for Fixture / Low Center Type for Support

Please, download CAD DATA on [www.sungilfa.com](http://www.sungilfa.com)

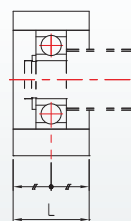
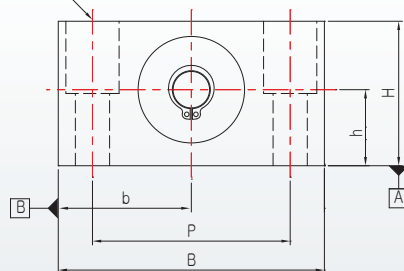
### CK 8 ~ 15

4-ØX DRILL, THRU  
ØY C'BORE, DP Z



### CF 8 ~ 15

4-ØX DRILL, THRU  
ØY C'BORE, DP Z



### Note

1. Installation can be conducted based on the surface of A and B. Please, use the spacer of accurate size when adjustment of height or length is necessary.
2. It is not allowed to disassemble the support unit as the preload of the bearing has been already controlled.
3. Precise amount of grease is filled in the support unit.
4. Tighten the setscrew after connecting the locknut to ball screw and performing adjustment.
5. Please refer to page 55 about bearing type and characteristic according to Support Unit grade
6. Please refer to page 60 about attachment torque of the lock nut.

Unit : mm

Model No.	d <sub>1</sub>	L	L <sub>1</sub>	L <sub>2</sub>	L <sub>3</sub>	B	H	b±0,02	h±0,02	P	C <sub>2</sub>	X	Y	Z	Collar Size	M	□T	Mess(g)
															L <sub>4</sub>			
CK8	8	21,5	4	26,5	3,5	62	31	31	15,5	46	11	9	14	18	6	M3x0,5	14	260
CK10	10	24	6	29,5	6	70	38	35	20	52	12	9	14	19	5,5	M4x0,7	16	430
CK12	12	24	6	29,5	6	70	38	35	20	52	12	9	14	19	5,5	M4x0,7	19	430
CK15	15	25	6	38	5	80	42	40	22	60	12,5	11	17	23	10	M4x0,7	22	540

Unit : mm

Model No.	d <sub>1</sub>	L	B	H	b±0,02	h±0,02	P	X	Y	Z	Bearing	Snap Ring	Mess(g)
CF8	6	16	62	31	31	15,5	46	9	14	18	606ZZ	C6	165
★ CF12	10	20	70	38	35	20	52	9	14	19	6000ZZ	C10	285
CF15	15	20	80	42	40	22	60	9	14	23	6002ZZ	C15	355

★CF12 is used to the CK10, CK12 into the common support unit.



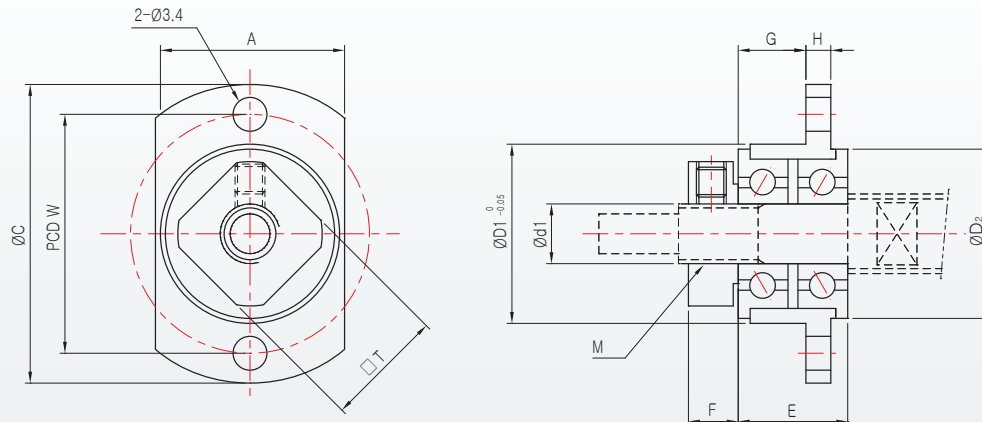
# WBK type Support Unit

## Miniature Type

Please, download CAD DATA on [www.sungilfa.com](http://www.sungilfa.com)

### WBK TYPE Miniature Support Unit

- Support unit can be applied when precision miniature ball screw is used.



### Note

1. Tighten locknut as flange type miniature ball bearing can be slightly detached from surface due to vibration during operation.
2. A WBK Type is assembled by bolt for delivery.

Unit : mm

Model No.	d <sub>1</sub>	A	C	D <sub>1</sub>	D <sub>2</sub>	E	F	G	H	W	U	M	Space
WBK04	4	14	25	13	12,5	9	5	5	2,5	19	10	M4×0,5	ø 8 × ø 4 × 1 - 1EA
WBK06	6	19	30	18	17	11	5	6,8	2,5	24	12	M6×0,75	ø 9,1 × ø 6 × 1 - 1EA

### Kinds of Support Units and Outside Diameter of Applied Screw

Inner Diameter of Fixture (mm)	Application of Fixture Model No.	Inner Diameter of Support (mm)	Inner Diameter of Support	Outside diameter of applied Screw (mm)
4	EK4 / FK4	-	-	ø 6
5	EK5 / FK5	-	-	ø 8
6	BK6 / EK6 / FK6	ø 6	BF6 / EF6 / FF6	ø 8
8	AK8 / BK8 / EK8 / FK8	ø 6	AF8 / BF8 / EF8 / FF8	ø 10, ø 12
10	AK10 / BK10 / EK10 / FK10	ø 8	AF10 / BF10 / EF10 / FF10	ø 14, ø 15
12	AK12 / BK12 / EK12 / FK12	ø 10	AF12 / BF12 / EF12 / FF12	ø 16, ø 18
15	AK15 / BK15 / EK15 / FK15	ø 15	AF15 / BF15 / EF15 / FF15	ø 20, ø 25
17	BK17 / FK17	ø 17	BF17 / FF17	ø 25
20	AK20 / BK20 / EK20 / FK20	ø 20	AF20 / BF20 / EF20 / FF20	ø 28, ø 30, ø 32
25	BK25 / EK25 / FK25	ø 25	BF25 / EF25 / FF25	ø 36
30	BK30 / FK30	ø 30	BF30 / FF30	ø 40, ø 45
35	BK35 / FK35	ø 35	BF35 / FF35	ø 45
40	BK40 / FK40	ø 40	BF40 / FF40	ø 50, ø 55

# Sungil Support Units

## How to Order

### Fixture

**BK10**

Fixture Model No.  
(EK, BK, AK, FK)

**P5**

(Grade : Precision)

**C8**

(Grade : Preload)

**P0-C7**

(Grade : Light Preload)

- P5 Type support unit is assembled by precision type bearing (preload and axial clearance is 0mm)
- C8 Type support unit is assembled by preload type bearing (preload and axial clearance is 0mm)
- P0-C7 Type support unit is assembled by general type bearing (light preload and axial clearance is 0mm)

### Support

**BF10**

Support Model No. (EF, BF, AF, FF)

Please, note that the type names and numbers for support part (EF, BF, AF, FF (No. 8, 10, 12) do not correspond to the internal diameter of bearing (Please, refer to page 45, 47, 49, 51)

TYPE name and number ≠ Internal diameter of bearing (EF, BF, AF, FF8= ø 6, EF, BF, AF, FF12= ø 10)

## Support Unit Characteristic Chart

Model No.	Bearing Type			Axial Direction	
	P5	C8	P0-C7	Rated Load Ca (Kgf)	Limited Load (kgf)
EK4 / FK4	-	-	634ZZ	-	-
EK5 / FK4	-	-	625ZZ	-	-
EK6	706ATYNDFMP5	-	606ZZ	250	110
BK6	-	-	EN6	-	-
EK8 / FK8	708ATYNDFMP5	-	EN8	410	150
BK8	-	-	EN8	-	-
AK8	708ATYNDFMP5	-	-	410	150
EK10 / BK10 / FK10 / AK10	7000ATYNDFMP5	7000AWDFM	7000AW	650	280
EK12 / BK12 / FK12 / AK12	7001ATYNDFMP5	7001AWDFM	7001AW	700	310
EK15 / BK15 / FK15 / AK15	7002ATYNDFMP5	7002AWDFM	7002AW	750	350
BK17, FK17	7203ATYNDFMP5	7203AWDFM	7203AW	1300	590
EK20 / FK20 / AK20	7204ATYNDFMP5	7204AWDFM	7204AW	1750	840
BK20	7004ATYNDFMP5	7004AWDFM	7004AW	1610	840
EK25 / BK25 / FK25	7205ATYNDFMP5	7205AWDFM	7205AW	1960	1010
BK30 / FK30	7206ATYNDFMP5	7206AWDFM	7206AW	2730	1340
BK35 / FK35	7207ATYNDFMP5	7207AWDFM	7207AW	3560	1840
BK40 / FK40	7208ATYNDFMP5	7208AWDFM	7208AW	4250	2290

## Bearing Combination

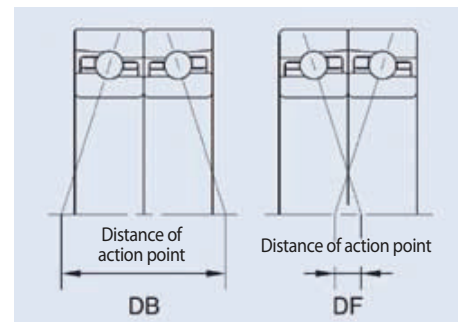
There are DB combination and DF combination in combination way of angular bearing. SI Support Unit is DF combination.

### DB Combination

- The point distance of action is long. So stiffness is big when moment load is affected. It is easy to get flaking damaged because of increase of inner load in case of misalignment.

### DF Combination

- The point distance of action is short. So stiffness is not good when moment load is affected. DF combination is normal type because acceptable rate of misalignment is good.



# SJU Type Joint Unit

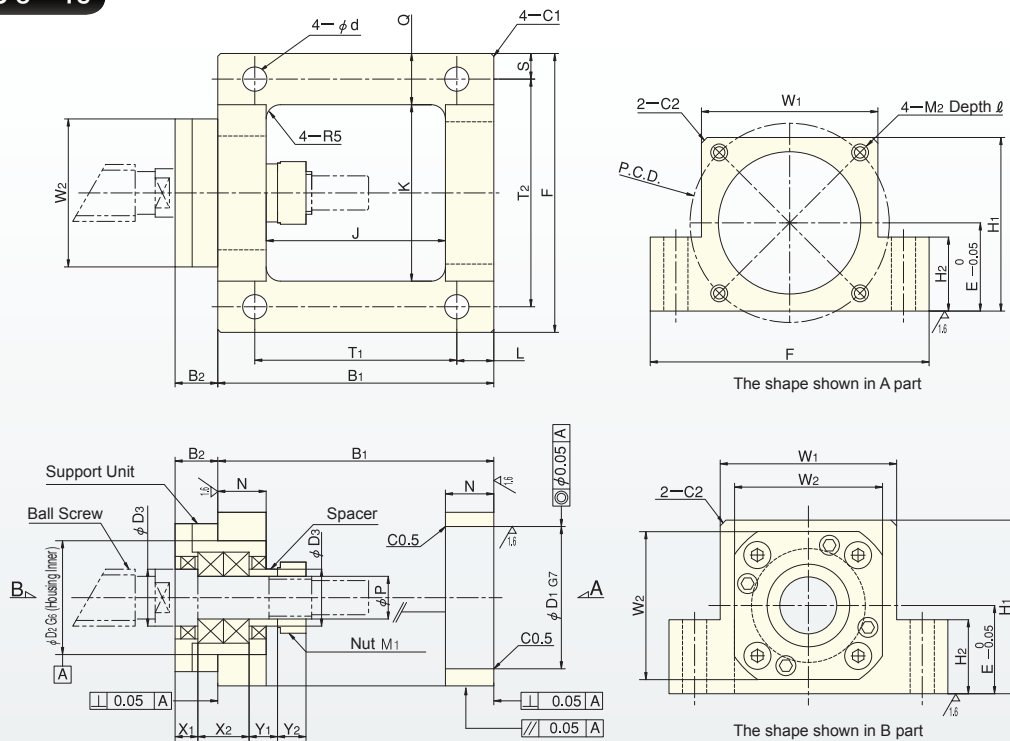
## Support Unit + Servo Motor Mount Plate



### Features

- **Simple assembly** : It is easy to assembly the motor by joint because of built-in servo unit.
- **High precision** : Some error of each shaft can be eliminated because ball screw part and motor part is monolithic structure.
- ※ **Notice** : There are two kinds of PCD according to servo motor specification. Therefore please check this part when you order.

### SJU 8 ~ 15



Unit : mm

Model Name	Model No.	P	B <sub>1</sub>	B <sub>2</sub>	D <sub>1</sub>	D <sub>2</sub>	D <sub>3</sub>	E	F	H <sub>1</sub>	H <sub>2</sub>	J	K	L	N	Q	S	T <sub>1</sub>	T <sub>2</sub>	W <sub>1</sub>	W <sub>2</sub>	X <sub>1</sub>	X <sub>2</sub>	Y <sub>1</sub>	Y <sub>2</sub>	PCD	M <sub>1</sub>	M <sub>2</sub>	d	l	Snap Ring
SJU	8A	8	67	9	30	28	11	21	64	41	19	43	40	10	12	12	6	47	52	40	35	5	14	5.5	6.5	45	M8×1	M3	5.5	8	FK8
	8B																									46		M4			
	10A	10	74	13	30	34	14	25	70	46	23	46	42	10	14	14	7	54	56	42	42	8	16	5.5	8	45	M10×1	M3	6.5	8	FK10
	10B																									46		M4			
	12A	12	74	13	30	36	15.1	25	72	47	23	46	44	10	14	14	7	54	58	44	44	8	16	5.5	8	45	M12×1	M3	6.5	8	FK12
	12B																									46		M4			
	15	15	97	15	50	40	20	31	98	61	26	63	62	13	17	18	9	71	80	62	52	8	18	10	8	70	M15×1	M5	8.5	13	FK15

※ Please refer to catalog if you want to find SI coupling that is compatible with SI Joint Unit.

# SBJU Type Joint Unit

## Support Unit + Servor Motor Mount Plate

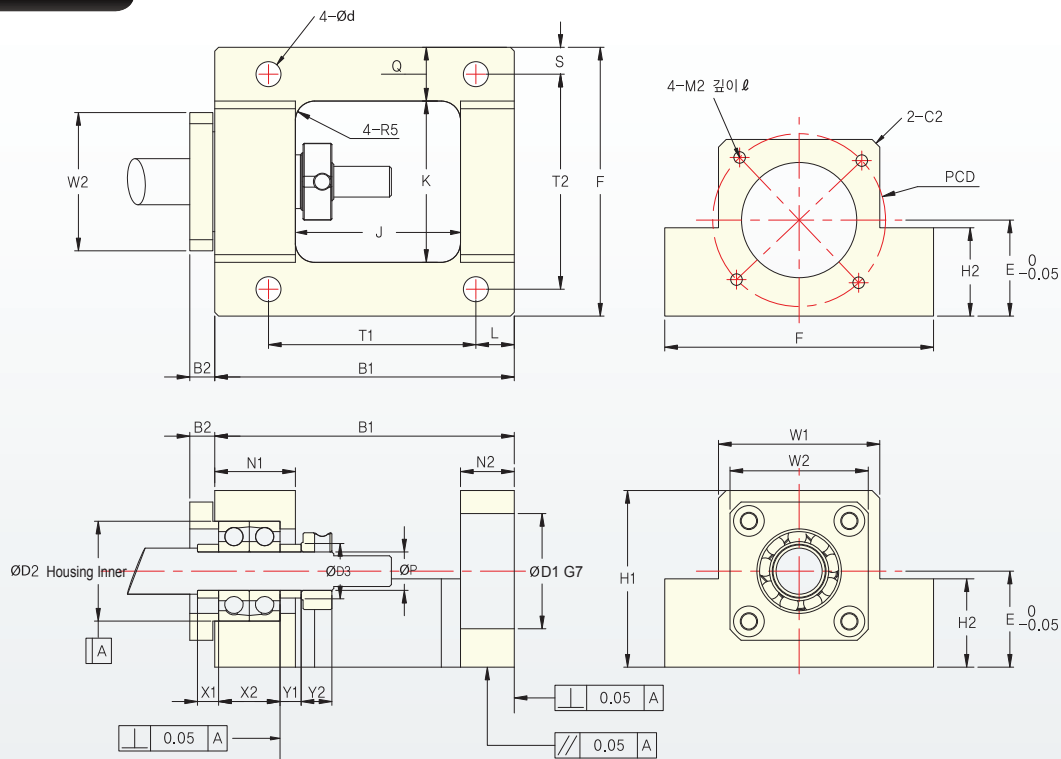
Please, download CAD DATA on [www.sungilfa.com](http://www.sungilfa.com)



### Features

- **Simple assembly** : It is easy to assembly the motor by joint because of built-in servo unit.
  - **High precision** : Some error of each shaft can be eliminated because ball screw part and motor part is monolithic structure.
  - Angular contact ball bearing is inserted into SBJU Type.
- ※ **Notice** : There are two kinds of PCD according to servo motor specification. Therefore please check this part when you order.

### SBJU 8 ~ 15



Unit : mm

Model Name	Model No.	P	B <sub>1</sub>	B <sub>2</sub>	D <sub>1</sub>	D <sub>2</sub>	D <sub>3</sub>	E	F	H <sub>1</sub>	H <sub>2</sub>	J	K	L	N <sub>1</sub>	N <sub>2</sub>	Q	S	T <sub>1</sub>	T <sub>2</sub>	W <sub>1</sub>	W <sub>2</sub>	X <sub>1</sub>	X <sub>2</sub>	Y <sub>1</sub>	Y <sub>2</sub>	PCD	M <sub>1</sub>	M <sub>2</sub>	d	l
SBJU	8A	8	73	6.5	30	24 (22)	11	21	64	41	19	42	40	10	19	12	12	6	47	52	40	34	7.5	14	5.5	6.5	45	M8×1	M3	5.5	8
	8B																										46		M4		10
	10A	10	79	6.5	30	26	14	25	70	46	23	44	42	10	21	14	14	7	54	56	42	36	5.5	16	5.5	8	45	M10×1	M3	6.5	8
	10B																										46		M4		10
	12A	12	79	6.5	30	28	15.1	25	72	47	23	44	44	10	21	14	14	7	54	58	44	36	5.5	16	5.5	8	45	M12×1	M3	6.5	8
	12B																										46		M4		10
	15	15	105	6.5	50	32	20	31	98	61	26	65	62	13	23	17	18	9	71	80	62	40	10	18	10	8	70	M15×1	M5	8.5	13

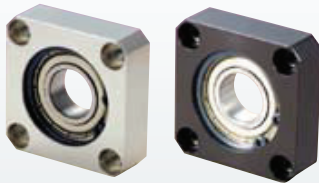
※ Please refer to catalog if you want to find SI coupling that is compatible with SI Joint Unit.

# Bearing Unit

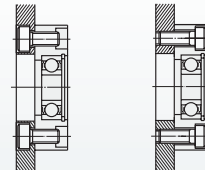
Please, download CAD DATA on [www.sungilfa.com](http://www.sungilfa.com)

## Single Bearing Type

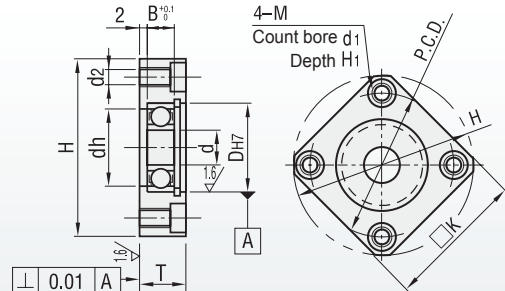
SBS - ■ ■ ■



Example (Single Bearing Type)



<Use the Tap> <Use the Count bore>

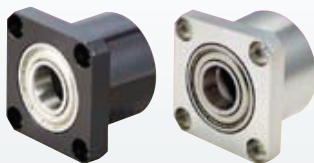


## Standards

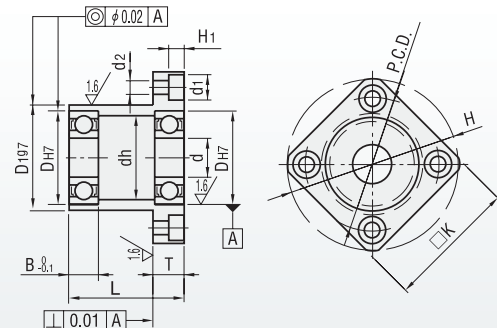
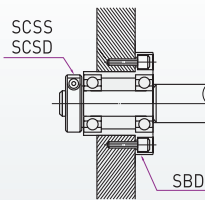
Standards	$\phi d$	$\phi D H_7$	B	$\phi H$	$\square K$	T	dh	PCD	M	$\phi d_2$	$\phi d_1$	H <sub>1</sub>	Bearing
SBS-8	8	22	7	45	36	12	18	35	5	4.3	8	4.4	608ZZ
SBS-10	10	26	8	50	39	13	22	40	5	4.3	8	4.4	6000ZZ
SBS-12	12	28	8	52	40	13	24	42	5	4.3	8	4.4	6001ZZ
SBS-15	15	32	9	60	46	14	28	48	6	5.2	9.5	5.4	6002ZZ
SBS-17	17	40	12	72	54	18	34	60	6	5.2	9.5	5.4	6203ZZ
SBS-20	20	42	12	77	59	18	36	64	8	6.8	11	6.5	6004ZZ
SBS-25	25	52	15	94	72	22	45	78	10	8.5	14	8.6	6205ZZ
SBS-30	30	62	16	104	79	23	55	88	10	8.5	14	8.6	6206ZZ

## Double Bearing Type

SBD - ■ ■ ■



Example (Double Bearing Type)



## Standards

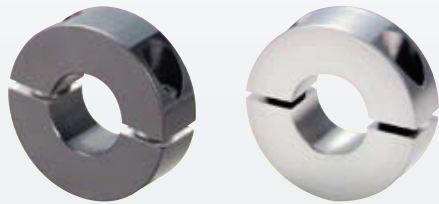
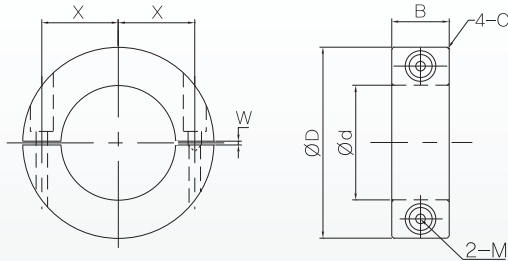
Standards	$\phi d$	$\phi D H_7$	$\phi D_1 g_7$	B	L	$\phi H$	$\square K$	T	dh	PCD	$\phi d_2$	$\phi d_1$	H <sub>1</sub>	Bearing
SBD-8	8	22	27	7	25	45	36	8	18	35	4.3	8	4.4	608ZZ
SBD-10	10	26	32	8	30	50	39	8	22	40	4.3	8	4.4	6000ZZ
SBD-12	12	28	34	8	30	52	40	8	24	42	4.3	8	4.4	6001ZZ
SBD-15	15	32	38	9	35	60	46	10	28	48	5.2	9.5	5.4	6002ZZ
SBD-17	17	40	48	12	45	72	54	10	34	60	5.2	9.5	5.4	6203ZZ
SBD-20	20	42	50	12	45	77	59	11	36	64	6.8	11	6.5	6004ZZ
SBD-25	25	52	60	15	45	94	72	13	45	78	8.5	14	8.6	6205ZZ
SBD-30	30	62	70	16	50	104	79	13	55	88	8.5	14	8.6	6206ZZ

# Set Collars

Please, download CAD DATA on [www.sungilfa.com](http://www.sungilfa.com)

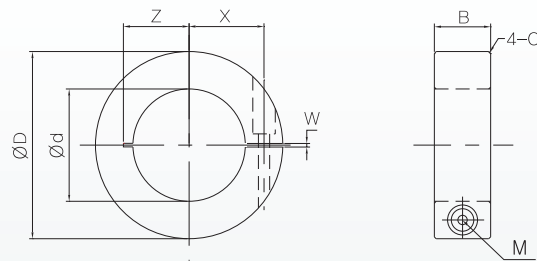
## Set Collars - Split Type

SCSD - ■ ■



## Set Collars - Slit Type

SCSS - ■ ■



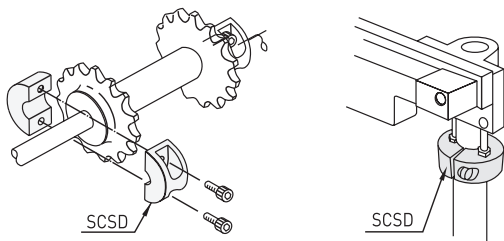
### Standards

Standards	$\varnothing d$	$\varnothing D$	B	C	W	M	X
SCSD-6	6	20	8	0,3	1	M3	6
SCSD-8	8	25	10	0,3	1	M4	8
SCSD-10	10	35	12	0,3	1,5	M5	10
SCSD-12	12	35	15	0,5	1,5	M6	11
SCSD-13	13	35	15	0,5	1,5	M6	11,5
SCSD-15	15	40	15	0,5	1,5	M6	13
SCSD-16	16	40	15	0,5	1,5	M6	13
SCSD-17	17	40	15	0,5	1,5	M6	13
SCSD-18	18	40	15	0,5	1,5	M6	15
SCSD-20	20	45	15	0,5	1,5	M6	15
SCSD-25	25	50	15	0,5	1,5	M6	18
SCSD-30	30	55	15	1	1,5	M6	20

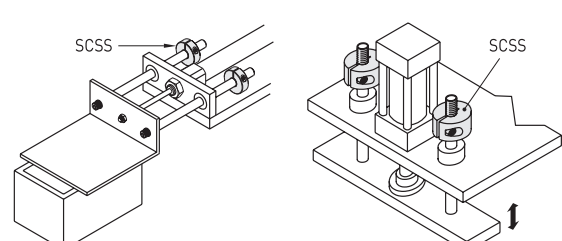
### Standards

Standards	$\varnothing d$	$\varnothing D$	B	C	W	M	X	Z
SCSS-6	6	20	8	0,3	1	M3	6	6-6,5
SCSS-8	8	25	10	0,3	1	M4	8	7-9
SCSS-10	10	35	12	0,3	1,5	M5	10	8-10
SCSS-12	12	35	15	0,5	1,5	M6	11	10-12
SCSS-13	13	35	15	0,5	1,5	M6	11,5	10-12
SCSS-15	15	40	15	0,5	1,5	M6	13	11-13
SCSS-16	16	40	15	0,5	1,5	M6	13	11-13
SCSS-17	17	40	15	0,5	1,5	M6	13	11-13
SCSS-18	18	40	15	0,5	1,5	M6	15	13-15
SCSS-20	20	45	15	0,5	1,5	M6	15	13-15
SCSS-25	25	50	15	0,5	1,5	M6	18	16-18
SCSS-30	30	55	15	1	1,5	M6	20	18-20

### Example (Set Collars - Split Type)



### Example (Set Collars - Slit Type)



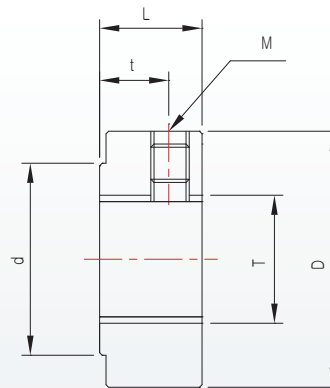
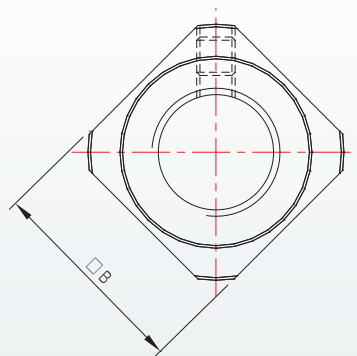
# Lock Nut



## Note

1. Locknut can be used by connecting ball screw to bearing with high accuracy.
2. The set piece connected to the stop screw ensures tight connection while preventing locknut from being loosened.

### LOCK NUT



Unit : mm

Model No.	T	M	D	d	L	t	□ B	Attachment Torque (Reference) (kgf.cm)
RN4	M4×0.5	M3×0.5	11	8.5	5	2.7	10	16
RN5	M5×0.5	M3×0.5	13	9	5	2.7	11	20
RN6	M6×0.75	M3×0.5	14.5	10	5	2.7	12	25
RN8	M8×1	M3×0.5	17	13	6.5	4	14	50
	★ M8×0.75							
RN10	M10×1	M4×0.7	20	15	8	5.5	16	95
	★ M10×0.75							
RN12	M12×1	M4×0.7	22	17	8	5.5	19	140
RN15	M15×1	M4×0.7	25	21	8	4.5	22	240
RN17	M17×1	M4×0.7	30	25	13	9	24	350
RN20	M20×1	M4×0.7	35	26	11	7	30	480
RN25	M25×1.5	M5×0.8	43	33	15	10	35	860
RN30	M30×1.5	M6×1	48	39	20	14	40	1,280
RN35	M35×1.5	M8×1.25	60	46	21	14	50	1,920
RN40	M40×1.5	M8×1.25	63	51	25	18	50	2,560

※ The product marked ★ is order specification.

# *Power Lock*





# Power Lock SAPC Series

## Sungil Aluminium Power Lock



### Features

#### 1. Aluminum Material

It is important to reduce the moment of inertia for high speed servo motor controlled positioning. It is possible by using the suitable aluminum power lock to realize low moment of inertia with high speed.

#### 2. Suitable for Aluminum Pulley

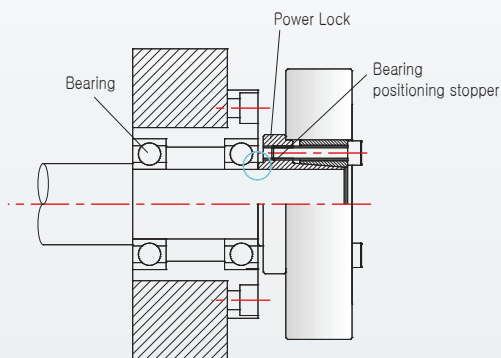
There was slipping problem with servo motor with timing pulley driving caused by mismatch of hub diameter, which ordinal frictional connection unit has high surface pressure. SAPC series are limited for servo motor torque and reduce the surface pressure to bore by reducing the screws.

#### 3. New suggestion Bearing positioning construction

Bearing construction is on Power Lock. Bearing positioning stopper is unnecessary

#### 4. Easy operation for installation positioning

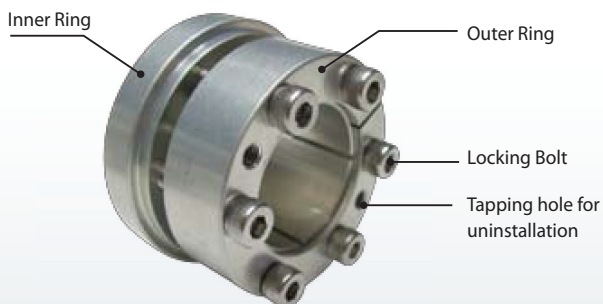
We have been suggested to leave the 1mm space for the installation before to concern the uninstal situation. However SAPC series provide smooth uninstal operation by positioning stopper. Also positioning is easy with it.



※ Be careful for deciding the hub outer diameter with aluminum alloy strength, which may modulus of direct elasticity be low.

※ Contact us for the combination of aluminum alloy and steel shaft installation with over 80 °C circumstances. It may cause of torque reduction at high temperature

### Structure & Material

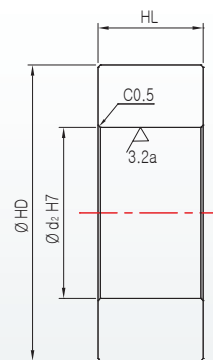
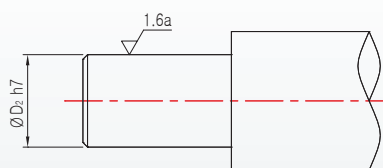


	Material	Surface Treatment
Inner Ring	Aluminum Alloy	Alumite
Outer Ring	Aluminum Alloy	Alumite
Locking Bolt	SCM 435	Electroless Nickel Coating

# SAPC Series

## Sungil Aluminium Power Lock

### Specification



Shaft and Hub Dimension

Model No.	Max Allowance Torque (N.m)	Allowance Trust Load (kN)	Surface pressure		Moment of Inertia  (kg/m <sup>2</sup> )	Shaft and Hub Dimension				
			Dimension			Hub Minium OD (HD)				
			Shaft(N/mm <sup>2</sup> )	Hub(N/mm <sup>2</sup> )		D <sub>2</sub>	d <sub>2</sub>	HL	Aluminum	S45C
SAPC-5-16	2,5	1,00	121	35	2,65 x 10 <sup>-7</sup>	5	16	9	20	19
SAPC-6-17	4	1,33	151	49	3,31 x 10 <sup>-7</sup>	6	17	9	23	21
SAPC-8-19	6	1,51	129	51	5,95 x 10 <sup>-7</sup>	8	19	10	26	24
SAPC-10-21	8	1,63	104	46	8,52 x 10 <sup>-7</sup>	10	21	10	29	26
SAPC-11-22	9	1,66	88	41	1,08 x 10 <sup>-6</sup>	11	22	11	30	26
SAPC-12-24	12	1,99	89	42	1,62 x 10 <sup>-6</sup>	12	24	12	33	29
SAPC-14-26	18	2,56	91	47	2,16 x 10 <sup>-6</sup>	14	26	12	38	31
SAPC-15-28	25	3,34	79	38	3,18 x 10 <sup>-6</sup>	15	28	13	40	33
SAPC-16-29	26	3,34	74	37	3,50 x 10 <sup>-6</sup>	16	29	13	41	34
SAPC-17-30	27	3,18	66	34	4,23 x 10 <sup>-6</sup>	17	30	14	42	35
SAPC-18-31	29	3,23	78	41	4,75 x 10 <sup>-6</sup>	18	31	14	46	36
SAPC-19-32	33	3,50	74	40	5,32 x 10 <sup>-6</sup>	19	32	14	49	37
SAPC-20-37	54	5,47	92	46	1,06 x 10 <sup>-5</sup>	20	37	16	54	44
SAPC-22-39	65	5,94	83	43	1,33 x 10 <sup>-5</sup>	22	39	16	56	46
SAPC-24-41	85	7,07	84	46	1,67 x 10 <sup>-5</sup>	24	41	18	59	48
SAPC-25-42	110	8,77	97	53	2,08 x 10 <sup>-5</sup>	25	42	19	64	51
SAPC-28-45	125	8,91	101	57	2,65 x 10 <sup>-5</sup>	28	45	19	72	55
SAPC-30-50	180	12,08	99	56	4,46 x 10 <sup>-5</sup>	30	50	20	76	60
SAPC-32-53	210	13,13	104	59	5,55 x 10 <sup>-5</sup>	32	53	20	81	65
SAPC-35-56	230	13,13	92	54	7,61 x 10 <sup>-5</sup>	35	56	22,5	85	67

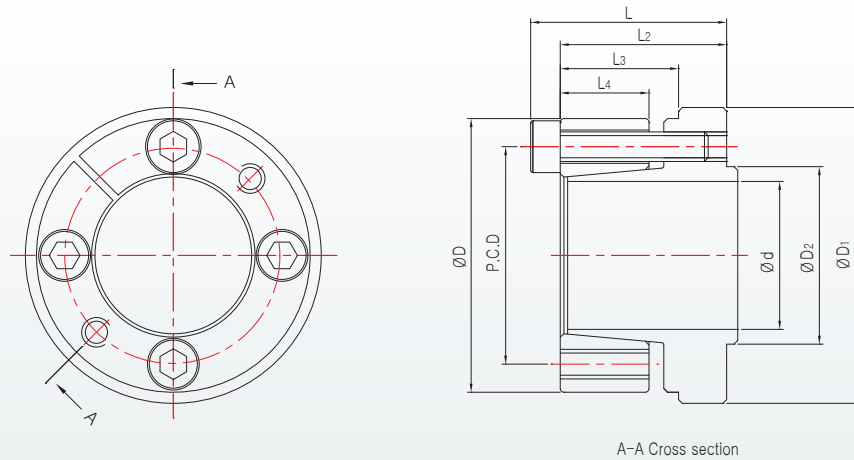
※ Hub outer diameter with aluminum alloy strength, which may modulus of direct elasticity is low so sometimes it is impossible to secure enough hub outer diameter with aluminum alloy strength.

※ Transmission reduce 15-20% about keyway type because of reduction of contact surface

## SAPC Series

Please, download CAD DATA on [www.sungilfa.com](http://www.sungilfa.com)

### Dimension



Model No. (dxD)	Dimension (mm)							Attachment Bolt			Mess (g)
	L	L <sub>2</sub>	L <sub>3</sub>	L <sub>4</sub>	D <sub>1</sub>	D <sub>2</sub>	P.C.D	Size	Quantity	Attachment Torque (N,m)	
SAPC-5-16	15,5	13	9	6,5	19	7,5	11,1	M2,5	2	1,0	7
SAPC-6-17	15,5	13	9	6,5	20	8,5	12,1	M2,5	3	1,0	8
SAPC-8-19	17,5	15	10	7,5	22	11	14,1	M2,5	4	1,0	11
SAPC-10-21	17,5	15	10	7,5	24	13	16,1	M2,5	4	1,0	12
SAPC-11-22	19,5	17	11	8	25	14	17,1	M2,5	4	1,0	14
SAPC-12-24	20,5	18	12	9	27	15	19,2	M2,5	5	1,0	17
SAPC-14-26	20,5	18	12	9	29	17	21,2	M2,5	6	1,0	19
SAPC-15-28	23	20	13	9,5	31	18,5	22,2	M3	4	1,9	24
SAPC-16-29	23	20	13	9,5	32	19,5	23,2	M3	4	1,9	25
SAPC-17-30	24	21	14	10	33	20,5	24	M3	4	1,9	28
SAPC-18-31	24	21	14	10	34	21,5	25	M3	5	1,9	29
SAPC-19-32	24	21	14	10	35	22,5	26	M3	5	1,9	30
SAPC-20-37	28	24	16	12	40	24	29,4	M4	4	3,9	47
SAPC-22-39	28	24	16	12	42	26	31,4	M4	4	3,9	52
SAPC-24-41	30	26	18	13	45	28	33,3	M4	5	3,9	57
SAPC-25-42	32	28	19	13,5	46	29	34,3	M4	6	3,9	67
SAPC-28-45	32	28	19	13,5	49	32	37,3	M4	7	3,9	73
SAPC-30-50	35	30	20	14,5	55	34,5	40,8	M5	5	8,8	101
SAPC-32-53	35	30	20	14,5	58	36,5	43,3	M5	6	8,8	112
SAPC-35-56	38	33	22,5	16	62	40	46,6	M5	6	8,8	134

# Power Lock SAPA Series

## Sungil Aluminium Power Lock



### Features

#### 1. Aluminum Material

It is important to reduce the moment of inertia for high speed servo motor controlled positioning. It is possible by using the suitable aluminum power lock to realize low moment of inertia with high speed.

#### 2. High Torque Transmission

It is possible to use this type in aluminum pulley and also steel pulley because it is made by aluminum alloy and it is possible to transfer high torque.

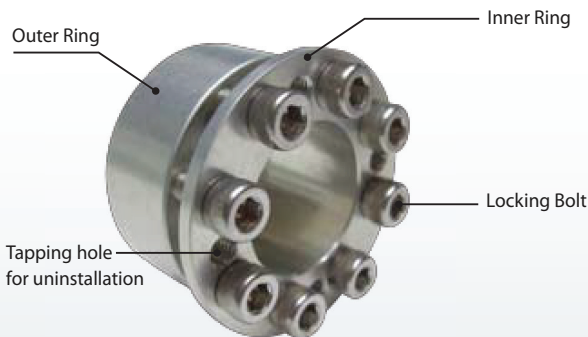
#### 3. The optimum in clean Room

SAPA is made by aluminum alloy and nickel coating bolt so is optimum in clean room

※ Be careful for deciding the hub outer diameter with aluminum alloy strength, which may modulus of direct elasticity be low

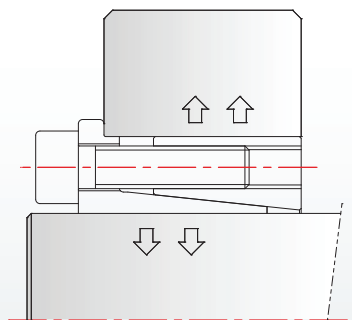
※ Contact us for the combination of aluminium alloy and steel shaft installation with over 80 ° circumstances. It may cause of torque reduction at high temperature

### Structure & Material



	Locking Bolt	Surface Treatment
Inner Ring	Aluminum Alloy	Alumite
Outer Ring	Aluminum Alloy	Alumite
Locking Bolt	SCM 435	Electroless Nickel Coating

### Attachment Principle



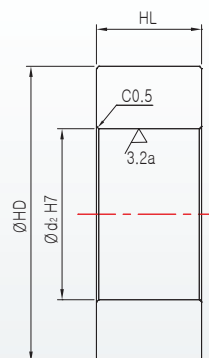
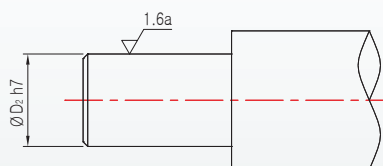
### How to Order



## SAPA Series

Please, download CAD DATA on [www.sungilfa.com](http://www.sungilfa.com)

### Specification



Shaft and Hub Dimension

Model No.	Max Allowance Torque (N.m)	Allowance Trust Load (kN)	Surface pressure		Moment of Inertia (kg/m <sup>2</sup> )	Shaft and Hub Dimension				
			Dimension			Hub Minium OD (HD)				
			Shaft(N/mm <sup>2</sup> )	Hub(N/mm <sup>2</sup> )			D <sub>2</sub>	d <sub>2</sub>	HL	Aluminum
SAPA-5-16	6	2,24	197	64	2,63 x 10 <sup>-7</sup>	5	16	13	28	22
SAPA-6-19	11	3,74	285	92	6,13 x 10 <sup>-7</sup>	6	17	14	35	27
SAPA-8-21	18	4,48	214	96	8,74 x 10 <sup>-7</sup>	7	19	15	39	30
SAPA-10-23	20	4,48	167	86	1,23 x 10 <sup>-6</sup>	10	21	16	41	32
SAPA-11-24	24	4,48	153	83	1,44 x 10 <sup>-6</sup>	11	22	16	42	33
SAPA-12-26	40	6,73	209	103	2,38 x 10 <sup>-6</sup>	12	24	17	50	38
SAPA-14-28	52	7,57	202	108	3,08 x 10 <sup>-6</sup>	14	26	17	56	42
SAPA-15-29	56	7,57	167	95	3,66 x 10 <sup>-6</sup>	15	28	18	53	41
SAPA-16-30	60	7,57	149	88	4,28 x 10 <sup>-6</sup>	16	29	18	54	42
SAPA-17-31	88	10,08	177	109	5,13 x 10 <sup>-6</sup>	17	30	19	61	46
SAPA-18-32	92	10,08	167	106	5,71 x 10 <sup>-6</sup>	18	31	19	62	47
SAPA-19-33	96	10,08	159	102	7,20 x 10 <sup>-6</sup>	19	32	19	63	48
SAPA-20-38	176	17,28	186	111	1,55 x 10 <sup>-5</sup>	20	37	23	82	60
SAPA22-40	232	20,80	204	126	1,84 x 10 <sup>-5</sup>	22	39	23	96	68
SAPA-24-42	256	20,80	173	113	2,23 x 10 <sup>-5</sup>	24	41	24	92	67
SAPA-25-43	280	21,76	172	109	2,49 x 10 <sup>-5</sup>	25	42	25	91	67
SAPA-28-46	304	21,60	153	101	3,36 x 10 <sup>-5</sup>	28	45	25	92	69
SAPA-30-48	328	21,60	142	97	3,86 x 10 <sup>-5</sup>	30	50	25	94	71
SAPA-32-50	352	21,60	124	88	4,60 x 10 <sup>-5</sup>	32	53	26	92	71
SAPA-35-57	576	32,88	195	132	8,46 x 10 <sup>-5</sup>	35	56	28	121	89

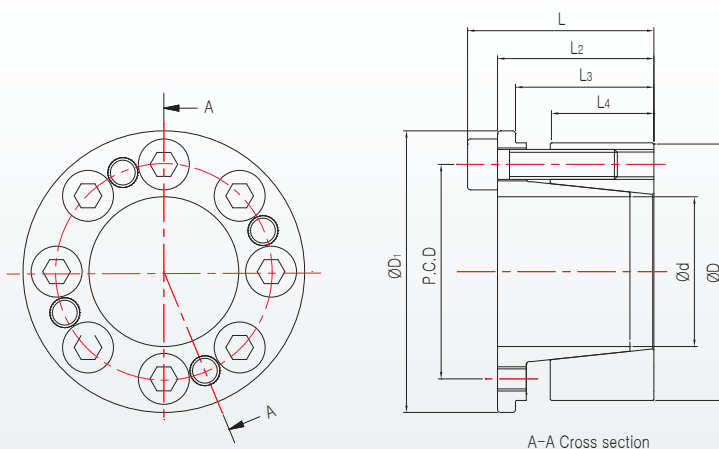
※ Hub outer diameter with aluminum alloy strength, which may modulus of direct elasticity is low so sometimes it is impossible to secure enough hub outer diameter with aluminum alloy strength.

※ Transmission reduce 15-20% about keyway type because of reduction of contact surface

# SAPA Series

## Sungil Aluminium Power Lock

### Dimension



Model No.	Dimension (mm)						Attachment Bolt			Mess (g)
	L	L <sub>2</sub>	L <sub>3</sub>	L <sub>4</sub>	D <sub>1</sub>	P.C.D	Size	Quantity	Attachment Torque (N.m)	
SAPA-5-16	16	13	11,2	6,5	18,5	11,7	M3	4	1,9	7
SAPA-6-19	18,3	14,3	12,3	6,5	21,5	14	M4	4	3,9	10
SAPA-8-21	18,6	14,6	12,6	6,5	23,5	15,4	M4	4	3,9	13
SAPA-10-23	18,8	14,8	12,8	6,5	25,5	17,5	M4	4	3,9	15
SAPA-11-24	19,8	15,8	13,8	7,5	26,5	18,4	M4	4	3,9	17
SAPA-12-26	22	18	15,5	7,5	28,5	20,2	M4	6	3,9	20
SAPA-14-28	22	18	15,5	8	30,5	22,2	M4	6	3,9	23
SAPA-15-29	23	19	16,5	9	31,5	23,2	M4	6	3,9	25
SAPA-16-30	23,6	19,6	17,1	9	33	24,2	M4	6	3,9	28
SAPA-17-31	24,1	20,1	17,6	9,5	33,5	25,2	M4	8	3,9	28
SAPA-18-32	24,1	20,1	17,6	9,5	34,5	26,2	M4	8	3,9	30
SAPA-19-33	24,1	20,1	17,6	10	35,5	27,2	M4	8	3,9	31
SAPA-20-38	29,1	24,1	21,1	10	42	30,8	M5	8	8,8	53
SAPA22-40	29,1	24,1	21,1	10	44	32,8	M5	8	8,8	60
SAPA-24-42	30,1	25,1	22,1	12	46	34,8	M5	8	8,8	65
SAPA-25-43	31,1	26,1	23,1	12	47	35,8	M5	8	8,8	68
SAPA-28-46	31,6	26,6	23,1	13	50	38,8	M5	10	8,8	71
SAPA-30-48	31,6	26,6	23,1	13,3	52	40,8	M5	10	8,8	76
SAPA-32-50	32,6	27,6	24,1	13,5	54	42,8	M5	10	8,8	80
SAPA-35-57	36	30	26	14,5	55	48,4	M6	8	15,7	117

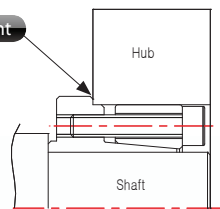
# Power Lock SAPC/SAPA Series

Please, download CAD DATA on [www.sungilfa.com](http://www.sungilfa.com)

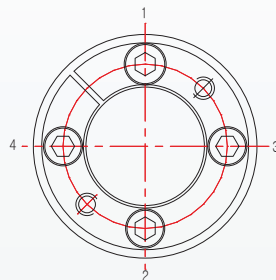
## Caution of installation

1. Please be clean installation inner diameter surface of power lock.
2. After install of power lock to shaft, and insert to the hub, which processed in selected dimension. Confirm the hub edge perfectly attached to flange. Confirm the depth by depth gage or caliper if it is difficult to judge by sight. If there is a gap at connection, power lock flange may be deformed and it is impossible to use deformed product again.

Confirm the hub edge attachment

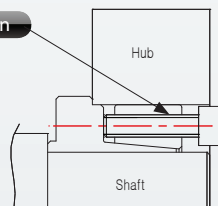


3. The inner ring taper and outer ring taper are stacking together by transportation and hard to insert the shaft and hub, loose the locking screws and disassemble the taper parts of power lock by using disassemble screw.
4. Tighten slowly and evenly in diagonal direction by 1/4 tightening torque after checking there are no gap between flange edge and hub. Next please increase to tightening torque, and finally please tighten by tightening torque of catalog. Also confirm the tightening torque is right for all screws and if there is not loosen bolt.



5. When you disassemble the power lock, please disassemble slowly by loosening screw in diagonal direction. If you don't disassemble step by step by using disassemble bolt hole, inner ring is deformed and it is impossible to use deformed product again.

Tapping hole for uninstallation



## Installation Guide

### Torque

Calculate the torque form r.p.m and motor torque line when you found motor capacity, there is reduction gear or not, and reduction gear rate. If there is no information of motor, then please use the standard formula below.

$$T_{max} = \frac{9550 \cdot P_{max}}{N} \times R \times K$$

$T_{max}$  : Generated Torque [N · m]

$P_{max}$  : Motor Capacity [kW]

$N$  : Rotation Speed [rpm]

$R$  : Reverse number of reduction gear

$K$  : Safe Factor

Factor of Load		K
Small inertia	Application is under 60% of motor rated torque.	1.5~2.0
Medium inertia	Long time for speeding up and reducing, or reversing operation is limited.	2.0~3.0
Large inertia	Rapid speed reduction and impact or frequent reversing.	3.0~5.0

### Thrust Load

Calculate by using general formula below when it has toque and thrust load together and compare with allowable maximum torque capacity of Power Lock

$$T_s = \sqrt{\left(\frac{9550 \cdot P_{max}}{N}\right)^2 + \left(\frac{H \cdot d}{2000}\right)^2} \cdot K$$

$T_s$  : Combined Load [N · m]

$H$  : Thrust Load [N]

$d$  : Inner Size [mm]

$K$  : Safe Factor

## This image shows a single sheet of white paper with horizontal ruling lines. The lines are evenly spaced and run across the width of the page. There are no margins, text, or other markings on the paper.



※Product design and specification are subject to change without notice for product improvement.



**SUNGIL MACHINERY CO., LTD.**

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