

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

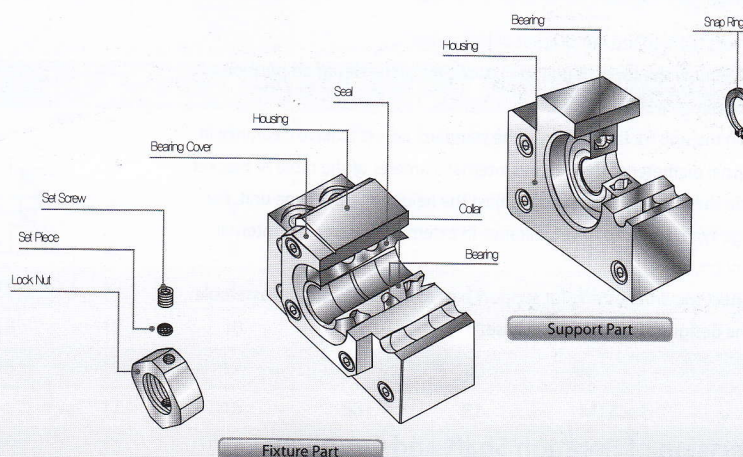
Angular contact ball bearing is precisely assembled in face-to-face duplex format. The influence by assembly error is minimized and the precision of rotation shaft is maintained as the product structure is designed to absorb parallel error between rotational shaft and guide about the center of the shaft.

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.

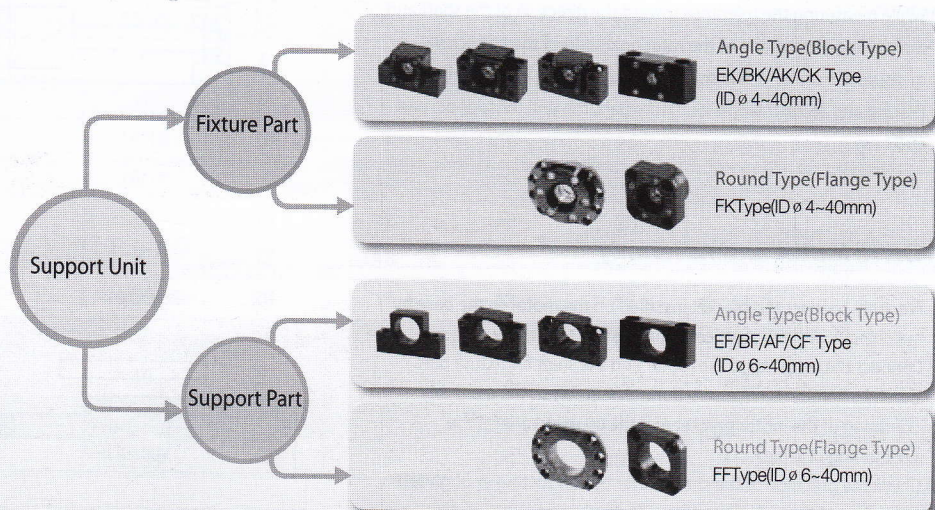
Structure

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

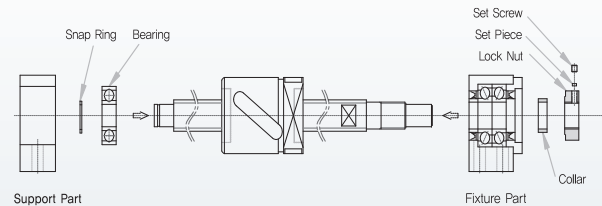
There are two types of units that are available for different conditions of installation and use. One employs angle type (block type) structure where the unit is fixed on the base surface, and the other employs round type (flange type) structure where the unit is inserted into a hole for fixation. The 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.



Steps to install the Support Unit

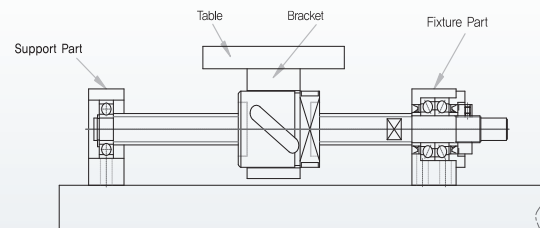
1. Assemble to Support Units

- 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.



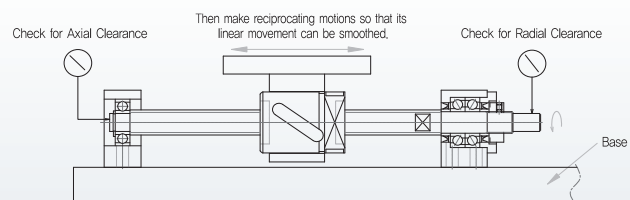
2. Assemble to Table and Base

- 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.



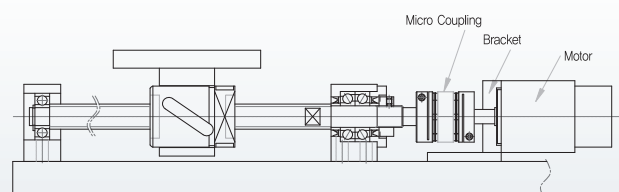
3. Precision of Rotation Shaft and Coupling

- 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

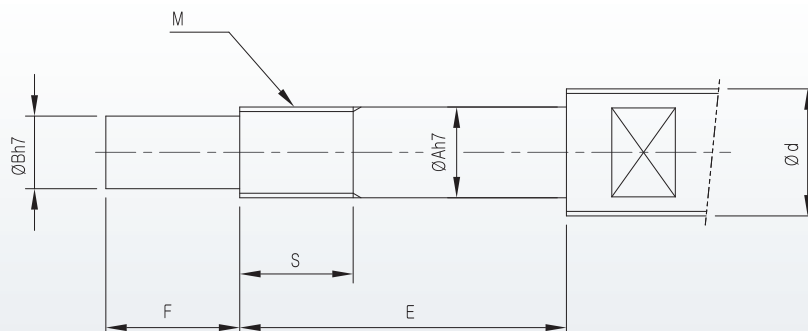
- 1) Precisely connect the bracket installed on the motor to the base by matching it with the shaft center of the ball screw.
- 2) Connect the coupling to the motor and the shaft for fixture part.
 - Careful attention is necessary during assembly as the assembly condition of the motor bracket and the 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

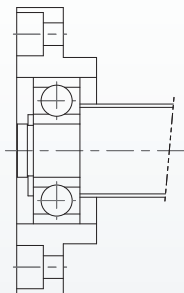
Characteristics of SI Support Units

Please, download CAD DATA on www.sungilfa.com

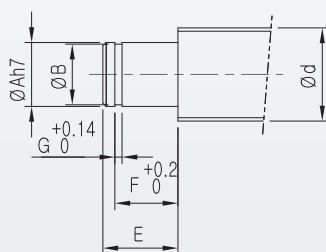
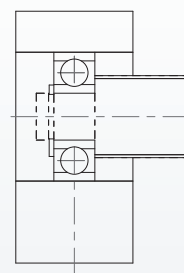
Recommendable Shape for Ball Screw

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



Support Units

How to Order

Fixture

BK10

P5 (Grade : Precision)

C8 (Grade : Preload)

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

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 / FK5	-	-	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.

