

## BALL SCREWS



# Your Partner in Automation Solutions



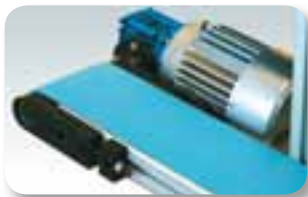
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Heavy Telescopic Rail



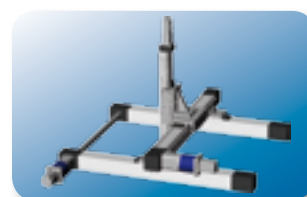
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Ball Screws

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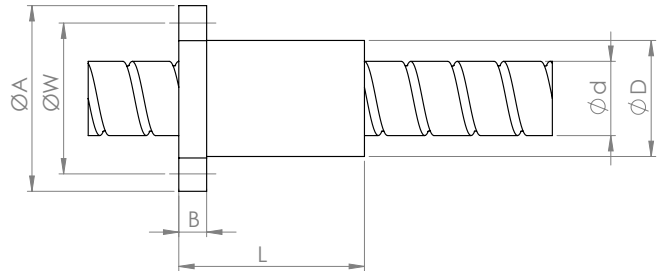
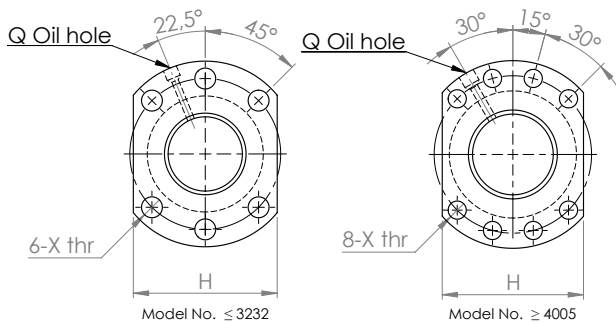
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## SFS – Singel nut with flange – DIN 69051 Form B

The SFS Serie of ball screw is a DIN standard flange nut in diameter 12 – 40 mm, in Grade C7. A standard ball screw with low noise and adjustable seal system. A perfect ball screw for normal automation applications.



### TECHNICAL PRODUCT SPECIFICATION

**Axial play in ballnut quality P0:** Varies from no play to max. 0.08 mm of play

**Axial play in ballnut quality P1:** No play (added cost)

**Accuracy on shaft grade C7:** 50µm/300mm

**Max speed:** See critical lap speed, page 21

**Max acceleration:** 10 m/s<sup>2</sup>

**Max temp:** 80° Celsius

**Max recommended load:** See in max. recommended load column below

### TECHNICAL DESCRIPTION

**d:** Diameter of ball screw

**n:** Number of circuits

**Ca:** Basic dynamic rating load (N)

**l:** lead on ball screw

**K:** Stiffness (N/um)

**Coa:** Basic static rating load (N)

**Da:** Ball diameter

**Max length:** Max length on ball screw shaft (mm)

**Max rec. load:** Max. recommended dyn. load (N)

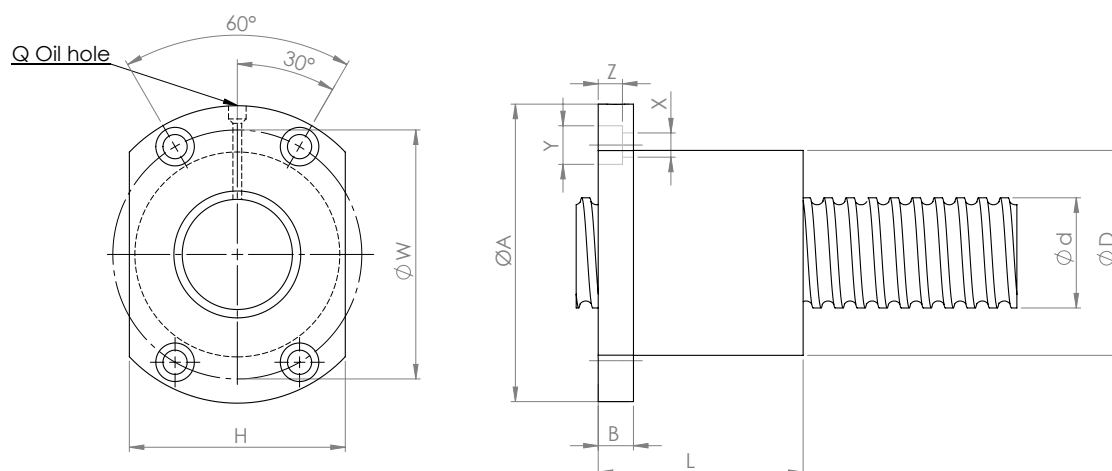
### TECHNICAL DIMENSIONS

Model No.	Dimension																
	d	l	Da	D	A	B	L	W	H	X	Q	n	Ca	Coa	K	Max length	Max rec. load
SFS1205-2.8	12	5	2.5	24	40	10	31	32	30	4.5	-	2.8x1	6610	13160	190	3000	658
SFS1605-3.8		5	2.778	28	48	10	38	38	40	5.5	M6	3.8x1	11120	25070	300	3000	1254
SFS1610-2.8	16	10	2.778	28	48	10	47	38	40	5.5	M6	2.8x1	8390	18210	230	3000	911
SFS1616-1.8		16	2.778	28	48	10	45	38	40	5.5	M6	1.8x1	5520	11370	140	2500	796
SFS2005-3.8		5	3.175	36	58	10	40	47	44	6.6	M6	3.8x1	14840	36810	370	3000	1841
SFS2010-3.8	20	10	3.175	36	58	10	60	47	44	6.6	M6	3.8x1	15160	38330	400	2500	1917
SFS2020-1.8		20	3.175	36	58	10	57	47	44	6.6	M6	1.8x1	7640	17580	190	3000	1231
SFS2505-3.8		5	3.175	40	62	10	40	51	48	6.6	M6	3.8x1	16500	46580	430	6000	4658
SFS2510-3.8	25	10	3.175	40	62	12	62	51	48	6.6	M6	3.8x1	16380	46330	450	6000	4633
SFS2525-1.8		25	3.175	40	62	12	70	51	48	6.6	M6	1.8x1	8430	21990	220	6000	2199
SFS3205-3.8		5	3.175	50	80	12	42	65	62	9	M6	3.8x1	18390	60260	510	6000	8436
SFS3210-3.8	32	10	3.969	50	80	13	62	65	62	9	M6	3.8x1	24600	72550	550	6000	10157
SFS3220-2.8		20	3.969	50	80	12	80	65	62	9	M6	2.8x1	19070	54820	430	6000	7675
SFS3232-2.8		32	3.969	50	80	13	116	65	62	9	M6	2.8x1	18380	53290	420	6000	7461
SFS4005-3.8		5	3.175	63	93	15	45	78	70	9	M8	3.8x1	20180	75890	600	6000	10625
SFS4010-3.8	40	10	6.35	63	93	14	63	78	70	9	M8	3.8x1	50350	139430	670	6000	19520
SFS4040-2.8		40	6.35	63	93	15	145	78	70	9	M8	2.8x1	37800	103410	520	6000	14477

## SFV – Singel nut with flange

The SFV Serie of ball screw has a single flange nut. It is made in Grade C7.

This type of ball screw is suitable for pressing applications or heavy load movements.



### TECHNICAL PRODUCT SPECIFICATION

**Axial play in ballnut quality P0:** Varies from no play to max. 0.12 mm of play

**Axial play in ballnut quality P1:** No play (added cost)

**Accuracy on shaft grade C7:** 50µm/300mm

**Max speed:** See critical lap speed, page 21

**Max acceleration:** 10 m/s<sup>2</sup>

**Max temp:** 80° Celsius

**Max recommended load:** See in max. recommended load column below

### TECHNICAL DESCRIPTION

**d:** Diameter of ball screw

**n:** Number of circuits

**Ca:** Basic dynamic rating load (N)

**l:** Lead on ball screw

**K:** Stiffness (N/µm)

**Coa:** Basic static rating load (N)

**Da:** Ball diameter

**Max length:** Max length on ball screw shaft (mm)

**Max rec. load:** Max. recommended dyn. load (N)

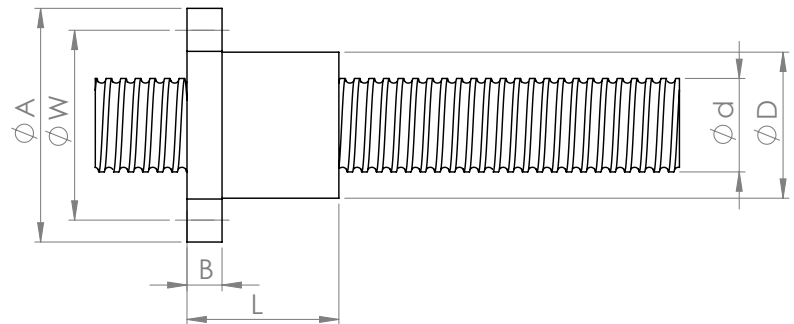
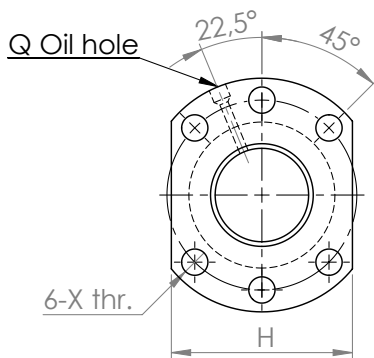
### TECHNICAL DIMENSIONS

Model No.	Dimension																	Max. Length	Max. Rec.Load
	d	l	Da	D	A	B	L	W	H	X	Y	Z	Q	n	Ca	Coa	K		
SFV5010-4.8	50	10	6.35	93	135	16	93	113	98	11	17.5	11	M8	4.8x1	70 230	235 370	1060	6 000	35 306
SFV6310-4.8	63	10	6.35	108	154	22	105	130	110	14	20	13	M8	4.8x1	78 600	304 300	1260	7 000	54 774



## SFU – Singel nut with flange – DIN 69051 Form B – Lefthanded

The SFU Serie of ballscrew is a Lefthanded DIN standard flange nut in diameter 16 – 32 mm. Made in Grade C7. This type of ball screw is used for making left and right handed applications. Use this SFU type together with the SFS serie when you build a left and right handed application.



### TECHNICAL PRODUCT SPECIFICATION

**Axial play in ballnut quality P0:** Varies from no play to max. 0.08 mm of play

**Axial play in ballnut quality P1:** No play (added cost)

**Accuracy on shaft grade C7:** 50µm/300mm

**Max speed:** See critical lap speed, page 21

**Max acceleration:** 10 m/s<sup>2</sup>

**Max temp:** 80° Celsius

**Max recommended load:** See in max. recommended load column below

### TECHNICAL DESCRIPTION

**d:** Diameter of ball screw

**n:** Number of circuits

**Ca:** Basic dynamic rating load (N)

**l:** Lead on ball screw

**K:** Stiffness (N/µm)

**Coa:** Basic static rating load (N)

**Da:** Ball diameter

**Max length:** Max length on ball screw shaft (mm)

**Max rec. load:** Max. recommended dyn. load (N)

### TECHNICAL DIMENSIONS

Model No.	Dimension																
	d	l	Da	D	A	B	L	W	H	X	Q	n	Ca	Coa	K	Max. Length	Max Rec. Load
SFU1605-4	16	5	3.175	28	48	10	50	38	40	5.5	M6	1x4	13 800	30 520	320	3 000	1526
SFU2005-4	20	5	3.175	36	58	10	51	47	44	6.6	M6	1x4	15 510	38 750	390	3 000	1938
SFU3205-4	32	5	3.175	50	80	12	52	65	62	9	M6	1x4	19 220	63 430	540	6 000	8 880

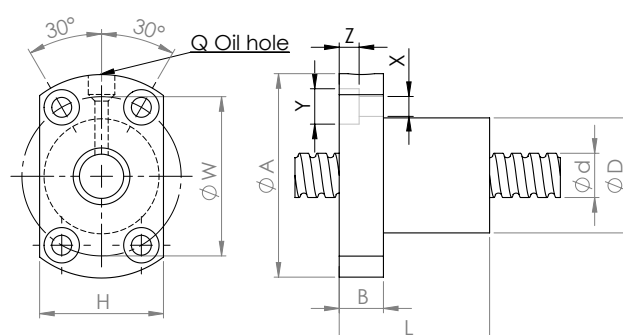
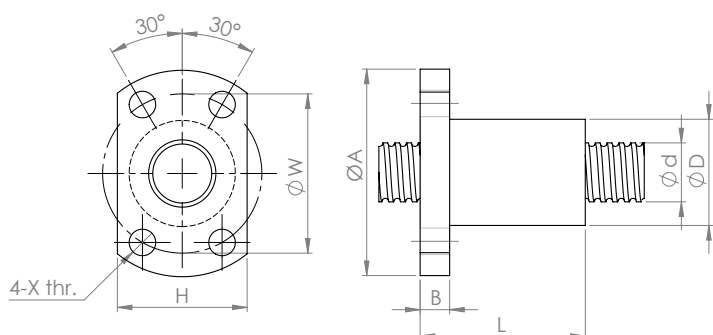
## SFK – Miniature ball screw with flange

The SFK Serie of ball screw is a Miniature Ball screw serie with flange nut in diameter 8 – 10mm, in Grade C7. This ball screw serie is always P1 clearance quality, with no axial play.



SFK00801, SFK00802, SFK01002

SFK01004



### TECHNICAL PRODUCT SPECIFICATION

**Axial play in ballnut quality P0:** Always in P1 quality

**Axial play in ballnut quality P1:** No play

**Accuracy on shaft grade C7:** 50µm/300mm

**Max speed:** See critical lap speed, page 21

**Max acceleration:** 5 m/s<sup>2</sup>

**Max temp:** 80° Celsius

**Max recommended load:** See in max. recommended load column below

### TECHNICAL DESCRIPTION

**d:** Diameter of ball screw

**n:** Number of circuits

**Ca:** Basic dynamic rating load (N)

**l:** Lead on ball screw

**K:** Stiffness (N/um)

**Coa:** Basic static rating load (N)

**Da:** Ball diameter

**Max length:** Max length on ball screw shaft (mm)

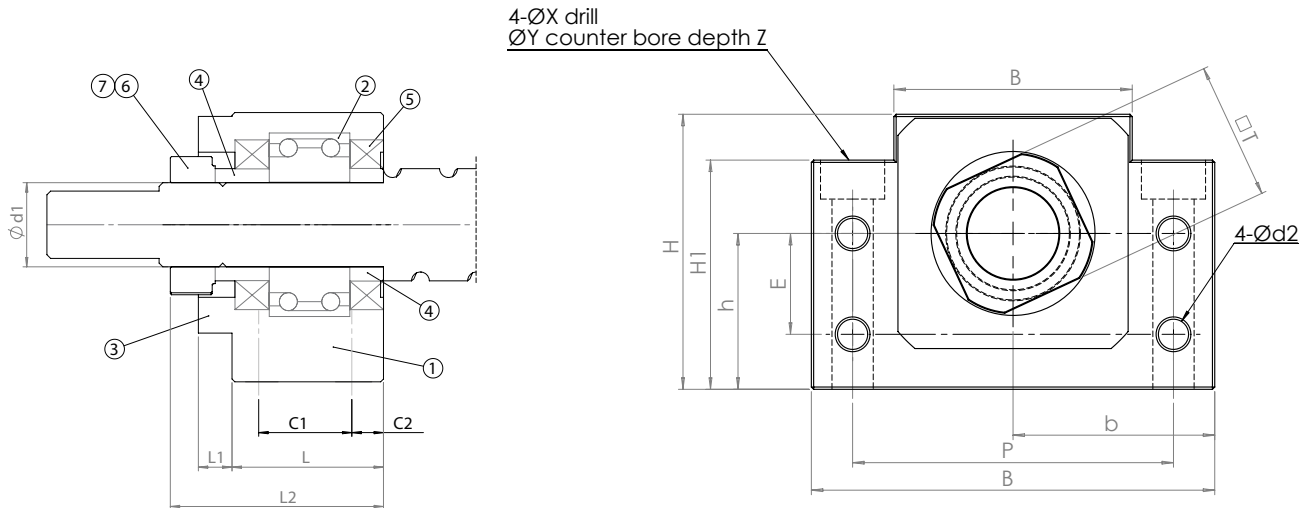
**Max rec. load:** Max. recommended dyn. load (N)

### TECHNICAL DIMENSIONS

Model No.	Dimension																		
	d	l	Da	D	A	B	L	W	H	X	Y	Z	Q	n	Ca	Coa	K	Max. Length	Max Rec.Load
SFK00801	8	1	0.8	14	27	4	16	21	18	3.4	-	-	-	1x4	1610	4 030	140	292	181
SFK00802	8	2	1.2	14	27	4	16	21	18	3.4	-	-	-	1x3	2 220	4 580	130	330	206
SFK01002	10	2	1.2	18	35	5	28	27	22	4.5	-	-	-	1x3	2 430	5 690	150	367	285
SFK01004	10	4	2	26	46	10	34	36	28	4.5	8	4.5	M6	1x3	4 680	9 050	170	367	453

## BK – Fixed side rectangular type

The BK- support unit is our standard rectangular fixed support unit for our SFS-serie of ball screws. It has one fixed axial radial bearing inside and includes locking nut and spacer, for complete mounting on the ball screw.



Part No.	Part name	Qty
1	Housing	1
2	Bearing	2
3	Holding lid	1
4	Spacer	2
5	Seal	2
6	Lock nut	1
7	(M) Hexagon socket-head setscrew	1

Model No.	Static load Capacity (N)	Max.Axial Dynamic. Load (N)	Max. Recommended Axial Dyn. Load (N)
BK10	5300	1950	975
BK12	6100	2170	1085
BK15	7000	2400	1200
BK20	13400	4280	2140
BK25	20900	7090	3545
BK30	30000	9390	4695
BK40	47000	18340	9170

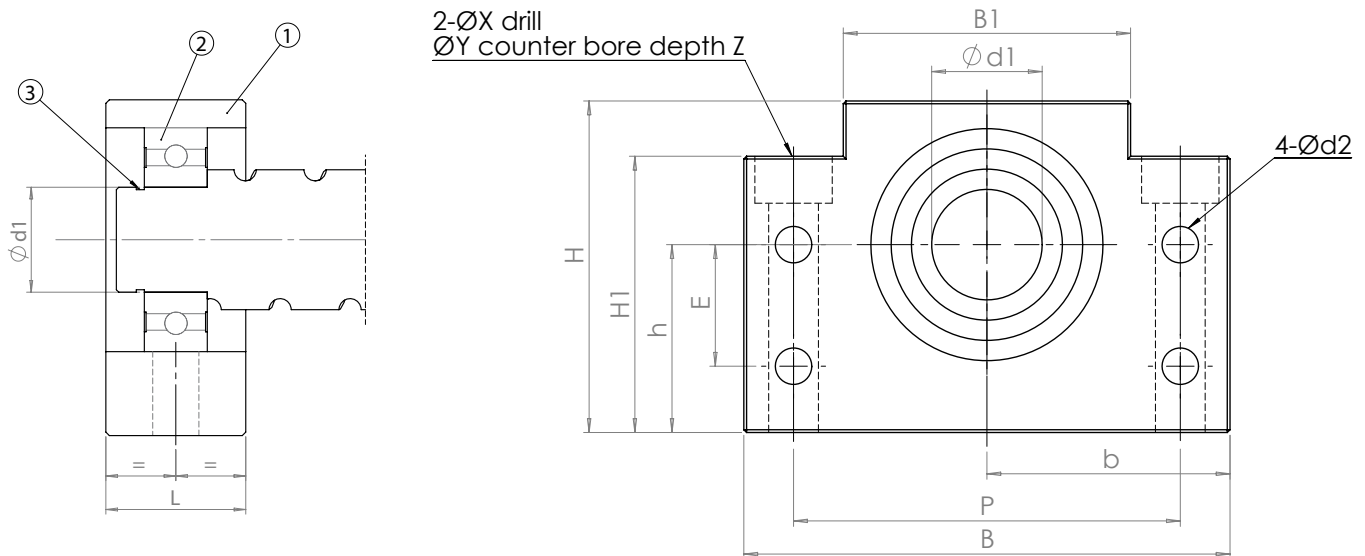
### TECHNICAL DIMENSIONS

Model No.	Ball screw size	Shaft Ø d1	L	L1	L2	B	H	b	h	B1	H1	E	P	C1	C2	d2	X	Y	Z	M	T	Weight (Kg)
								+/-0.02	+/-0.02													
BK10	12	10	25	5	34	60	39	30	22	34	32.5	15	46	13	6	5.5	6.6	10.8	5	M3	16	0.4
BK12	16	12	25	5	34	60	43	30	25	34	32.5	18	46	13	6	5.5	6.6	10.8	1.5	M4	19	0.45
BK15	20	15	27	6	38	70	48	35	28	40	38	18	54	15	6	5.5	6.6	11	6.5	M4	22	0.6
BK20	25	20	35	8	51	88	60	44	34	52	50	22	70	19	8	6.6	9	14	8.5	M4	30	1.3
BK25	32	25	42	12	63	106	80	53	48	64	70	33	85	22	10	9	11	17	11	M5	35	2.4
BK30	40	30	45	14	70	128	89	64	51	76	78	33	102	23	11	11	14	20	13	M6	40	3.4
BK40	50	40	61	18	91	160	110	80	60	100	90	37	130	33	14	14	18	26	17.5	M8	50	6.8



## BF – Support side rectangular type

The BF- support unit is our standard rectangular support unit for our SFS-serie of ball screws. It has one radial bearing inside. It is only to be used on the support side of the ball screw. The snapping is included for complete mounting on the ball screw.



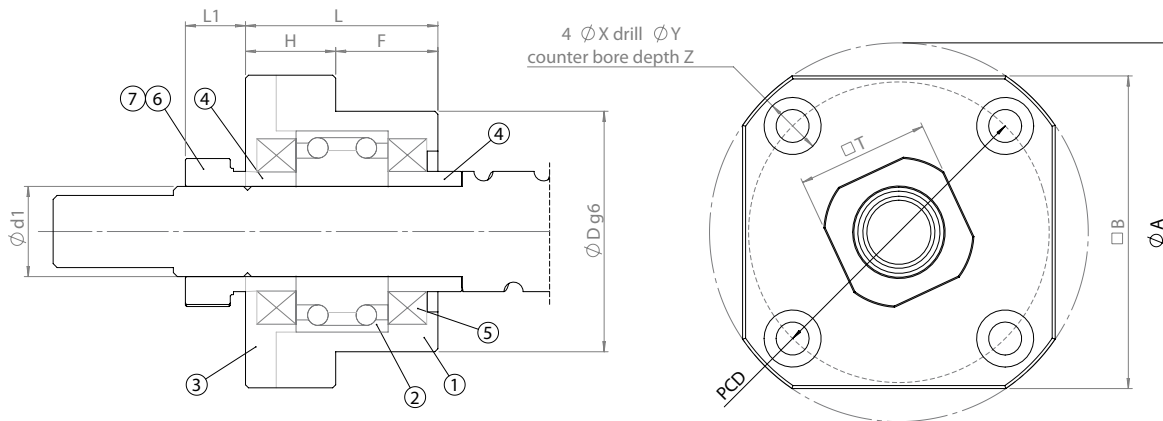
Part No.	Part name	Qty
1	Housing	1
2	Bearing	1
3	Snap ring	1

### TECHNICAL DIMENSIONS

Model No.	Ball screw size	Shaft $\varnothing d1$	L	B	H	b	h	B1	H1	E	P	d2	X	Y	Z	Bearing	Snap ring	Weight (Kg)
						+/-0.02	+/-0.02											
BF10	12	8	20	60	39	30	22	34	32.5	15	46	5.5	6.6	10.8	5	608ZZ	S08	0.3
BF12	16	10	20	60	43	30	25	34	32.5	18	46	5.5	6.6	10.8	1.5	6000ZZ	S10	0.35
BF15	20	15	20	70	48	35	28	40	38	18	54	5.5	6.6	11	6.5	6002ZZ	S15	0.4
BF20	25	20	20	26	88	44	34	52	50	22	70	6.6	9	14	8.5	6004ZZ	S20	0.77
BF25	32	25	30	106	80	53	48	64	70	33	85	9	11	17	11	6205ZZ	S25	1.45
BF30	40	30	32	128	89	64	51	76	78	33	102	11	14	20	13	6206ZZ	S30	1.95
BF40	50	40	37	160	110	80	60	100	90	37	130	14	18	26	17.5	6208ZZ	S40	3.3

## FK – Fixed side round type

The FK-support unit is our standard round fixed support unit for our SFS-serie and SFK-serie of ball screws. It has two fixed axial radial bearing inside and includes locking nut and spacer, for complete mounting on the ball screw.



Part No.	Part name	Qty
1	Housing	1
2	Bearing	2
3	Holding lid	1
4	Spacer	2
5	Seal	2
6	Lock nut	1
7	(M) Hexagon socket-head setscrew	1

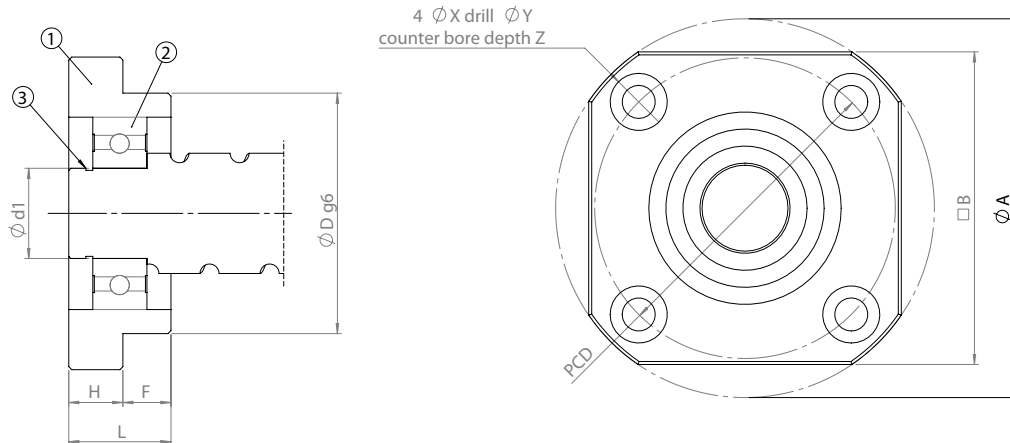
Model No.	Static load Capacity (N)	Max.Axial Dynamic Load (N)	Max.Recommended Axial Dyn. Load (N)
<b>FK06</b>	2 000	740	370
<b>FK08</b>	2 800	1 030	515
<b>FK10</b>	5 300	1 950	975
<b>FK12</b>	6 100	2 170	1 085
<b>FK15</b>	7 000	2 400	1 200
<b>FK20</b>	16 900	5 870	2 935
<b>FK25</b>	20 900	7 090	3 545
<b>FK30</b>	30 000	9 390	4 695

### TECHNICAL DIMENSIONS

Model No.	Ball screw size	Shaft Ø d1	L	H	F	Dg6		A	PCD	B	L1	X	Y	Z	M	T	Weight (Kg)
FK06	8	6	20	7	13	22	-0.007 -0.02	36	28	28	5.5	3.4	6.5	4	M3	12	0.12
FK08	10	8	23	9	14	28	-0.007 -0.02	43	35	35	7	3.4	6.5	4	M3	14	0.16
FK10	12	10	27	10	17	34	-0.009 -0.025	52	42	42	7.5	4.5	8	4	M3	16	0.25
FK12	15	12	27	10	17	36	-0.009 -0.025	54	44	44	7.5	4.5	8	4	M4	19	0.26
FK15	20	15	32	15	17	40	-0.009 -0.025	63	50	52	10	5.5	9.5	6	M4	22	0.4
FK20	25	20	52	22	30	57	-0.010 -0.029	85	70	68	8	6.6	11	10	M4	30	1.2
FK25	32	25	57	27	30	63	-0.010 -0.029	98	80	79	13	9	15	13	M5	35	1.6
FK30	40	30	62	30	32	75	-0.010 -0.029	117	95	93	11	11	17.5	15	M6	40	2.38

## FF – Support side round type

The FF-support unit is our standard round support unit for our SFS-serie and SFK-serie of ball screws. It has one radial bearing inside. It is only to be used on the support side of the ball screw. Includes the snapping for complete mounting on the ball screw.



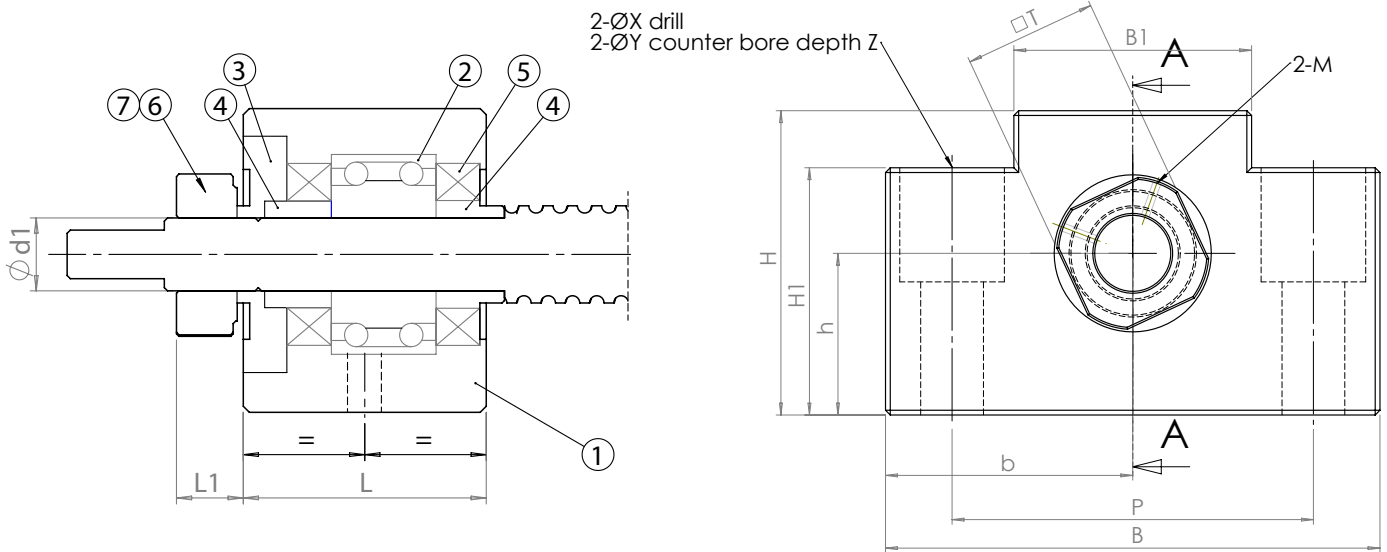
Part No.	Part name	Qty
1	Housing	1
2	Bearing	1
3	Snap ring	1

### TECHNICAL DIMENSIONS

Model No.	Ball screw size	Shaft Ø d1	L	H	F	Dg6		A	PCD	B	X	Y	Z	Bearing	Snap ring	Weight (Kg)
FF06	8/10	6	10	6	4	22	-0.007 -0.02	36	28	28	3.4	6.5	4	606ZZ	S 06	0.08
FF10	12	8	12	7	5	28	-0.007 -0.02	43	35	35	3.4	6.5	4	608ZZ	S 08	0.1
FF12	15	10	15	7	8	34	-0.009 -0.025	52	42	42	4.5	8	4	6000ZZ	S 10	0.15
FF15	20	15	17	9	8	40	-0.009 -0.025	63	50	52	5.5	9.5	5.5	6002ZZ	S 15	0.22
FF20	25	20	20	11	9	57	-0.010 -0.029	85	70	68	6.6	11	6.5	6204ZZ	S 20	0.45
FF25	32	25	24	14	10	63	-0.010 -0.029	98	80	79	9	14	8.5	6205ZZ	S 25	0.66
FF30	40	30	27	18	9	75	-0.010 -0.029	117	95	93	11	17	11	6206ZZ	S 30	1.05

## EK-Miniature – Fixed side rectangular type

The EK-support unit is our Miniature rectangular fixed support unit for our SFK-serie of ball screws. It has one fixed axial radial bearing inside and includes locking nut and spacer, for complete mounting on the ball screw.



Part No.	Part name	Qty
1	Housing	1
2	Bearing	2
3	Holding lid	1
4	Spacer	2
5	Seal	2
6	Lock nut	1
7	(M) Hexagon socket-head setscrew	1

Model No.	Static load Capacity (N)	Max. Axial Dynamic Load (N)	Max. Recommended Axial Dyn. Load (N)
EK06	2 000	740	370
EK08	2 800	1 030	515

### TECHNICAL DIMENSIONS

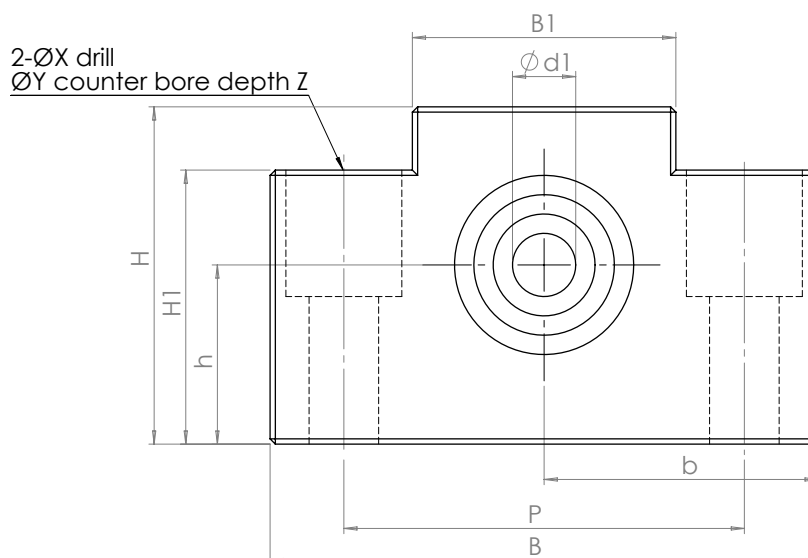
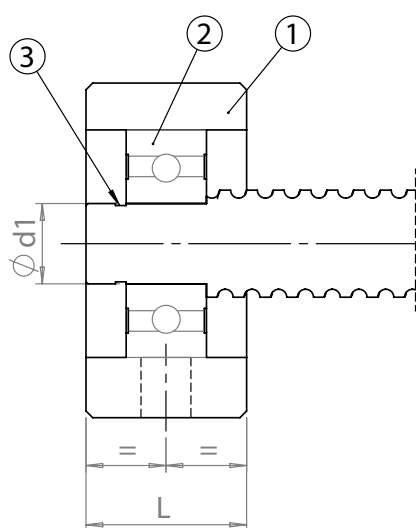
Model No.	Ball screw size	Shaft Ød1	L	L1	B	H	b	h	B1	H1	P	X	Y	Z	M	T	Weight (Kg)
							+/-0.02	+/-0.02									
EK06	8	6	20	5.5	42	25	21	13	18	20	30	5.5	9.5	11	M3	12	0.18
EK08	10	8	23	7	52	32	26	17	25	26	38	6.6	11	12	M3	14	0.27

## EF-Miniature – Support side rectangular type

The EF-support unit is our Miniature rectangular support unit for our SFK-serie of ball screws. It has only one radial bearing inside.

It is only to be used on the support side of the ball screw.

The snapping is included for complete mounting on the ball screw.



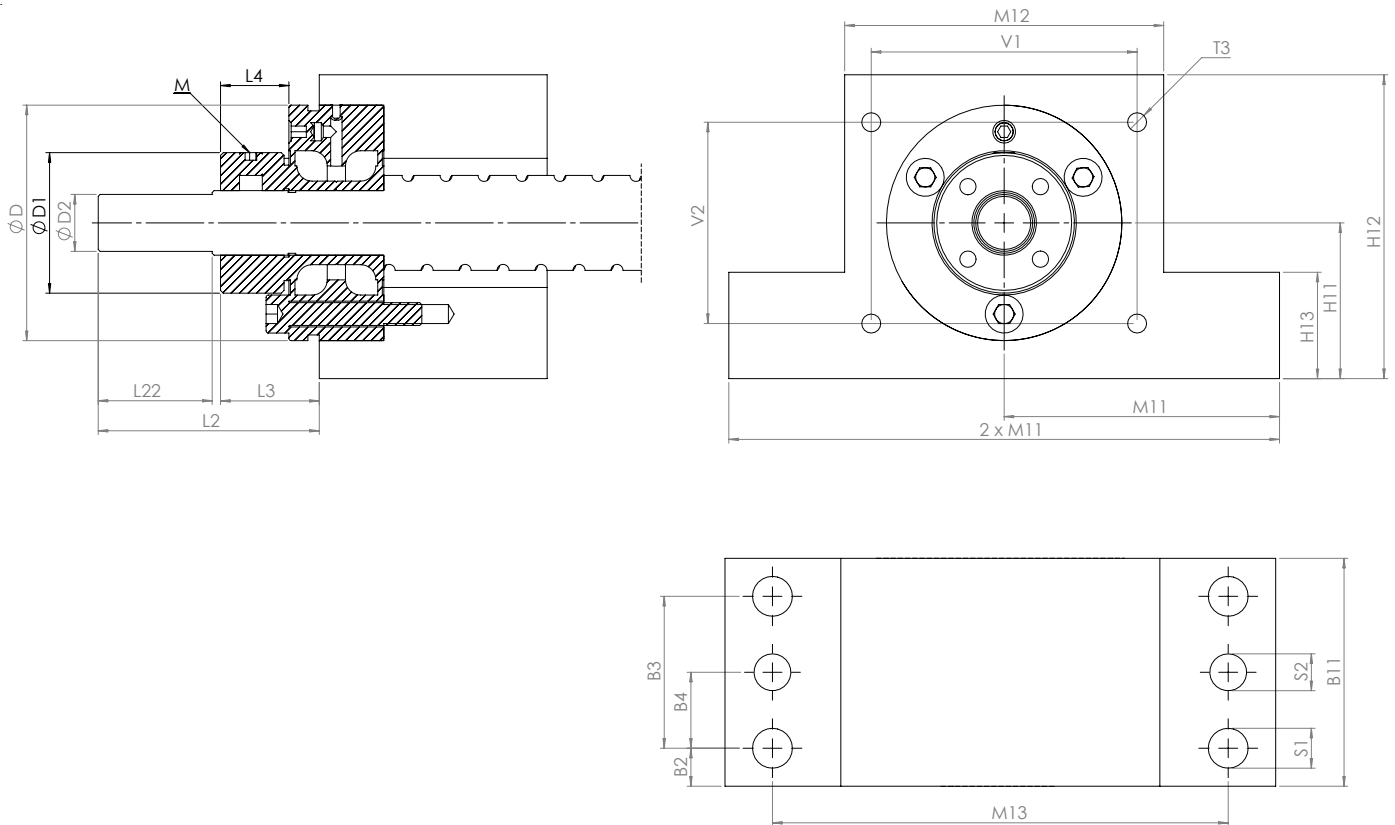
Part No.	Part name	Qty
1	Housing	1
2	Bearing	1
3	Snap ring	1

### TECHNICAL DIMENSIONS

Model No.	Ball screw size	Shaft $\phi d1$	L	B	H	b $\pm$ 0.02	h $\pm$ 0.02	B1	H1	P	X	Y	Z	Bearing	Snap ring	Weight (Kg)
EF06	8	6	12	42	25	21	13	18	20	30	5.5	9.5	11	606ZZ	S 06	0.1
EF08	10	6	14	52	32	26	17	25	26	38	6.6	11	12	606ZZ	S 06	0.16

## KL-F-Heavy, fixed side rectangular type

The KL-F-support unit is our Heavy rectangular fixed support unit for our SFS-serie of ball screws. It has one fixed axial radial bearing inside and includes lock nut, for complete mounting on the ball screw. This support unit is used when you would like to attach the motorflange and coupling on the support unit. You will find other accessories to this supportunit on page 20.



Model No.	Locknut	L4	D1	M
KL-F25	RN17	13	37	M4
KL-F32	RN20	11	40	M4
KL-F40	RN30W	20	50	M6

Model No.	Static load Capacity (N)	Max. Axial Dynamic Load (N)	Max. Recommended Axial Dyn. Load (N)
KL-F25	31 000	18 800	9 400
KL-F32	47 000	26 000	13 000
KL-F40	64 000	29 000	20 000

### TECHNICAL DIMENSIONS

Model No.	Ball screw size	D	Bearing	B2	B3	B4	B11	D2	L2	L3	L22	M11	M12	M13	H11	H12	H13	S1	S2	T3	V1	V2
												+/- 0.02			+/- 0.02							
KL-F25	25	62	ZKLF1762-2RS	10	40	20	60	15	58	21	30	72.5	84	120	41	80	28	10.5	9.7	M6	70	53
KL-F32	32	68	ZKLF2068-2RS	10	40	20	60	16	58	19	35	72.5	102	120	46	90	28	10.5	9.7	M8	86	59
KL-F40	40	80	ZKLF3080-2RS	12.5	40	20	65	25	80	28	50	90	115	150	56	110	33	13	11.5	M8	96	69

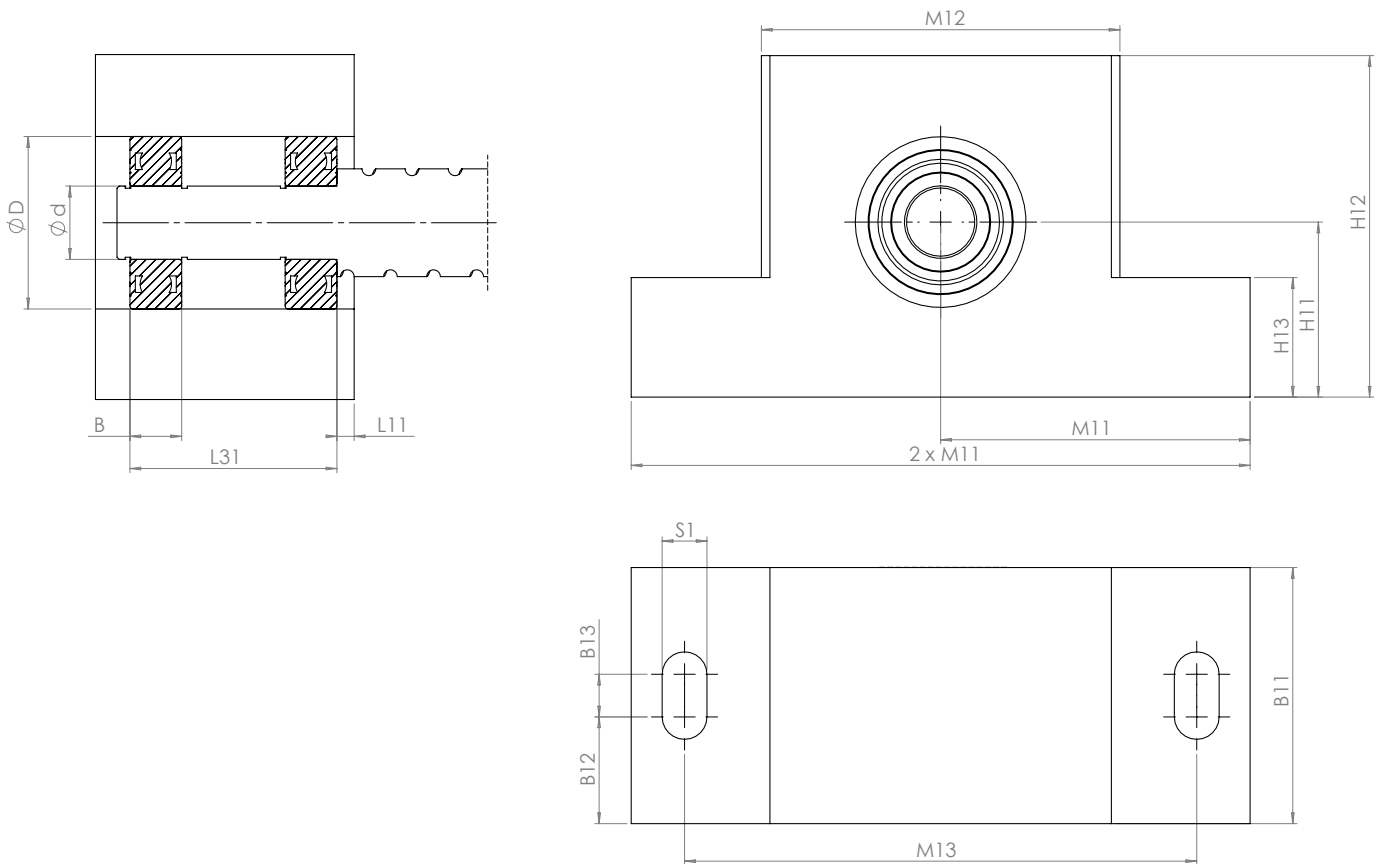


## KL-L-Heavy, support side rectangular type

The KL-L-support unit is our Heavy rectangular support unit for our SFS-serie of ball screws.

It has two radial bearings inside. It is only to be used on the support side of the ball screw.

Snapring is included for complete mounting on the ball screw.



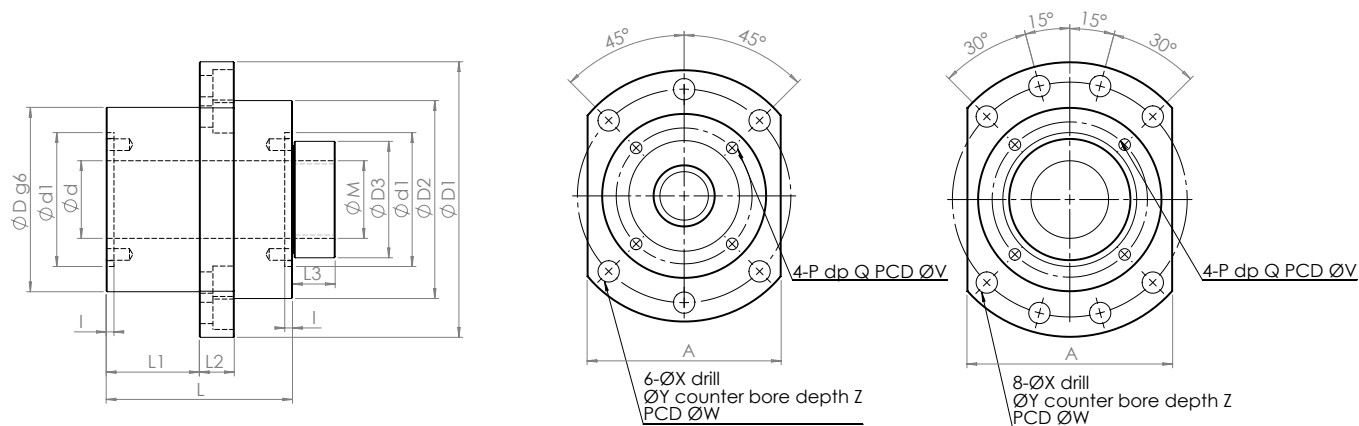
### TECHNICAL DIMENSIONS

Model No.	Ball screw size	d	D	B	Bearing	Snap ring	B11	B12	B13	L11	L31	M11 +/-0.02	M12	M13	H11 +/-0.02	H12	H13	S1
KL-L25	25	17	40	12	6203.2RS	S17	60	25	10	4	25	72,5	80	120	41	80	28	10.5
KL-L32	32	25	52	15	6205.2RS	S25	70	30	10	4	60	72,5	102	120	46	90	28	10.5
KL-L40	40	30	62	16	6206.2RS	S30	80	35	10	4	68	90	115	150	56	110	33	13

## WBK-Heavy, fixed side round type

The WBK- support unit is our Heavy round fixed support unit for our SFV-serie of ball screws. It has one fixed axial radial bearing inside and includes locking nut and spacer, for complete mounting on the ball screw.

WBK-support unit is mostly used for heavy load or pressing applications.



### TECHNICAL DIMENSIONS

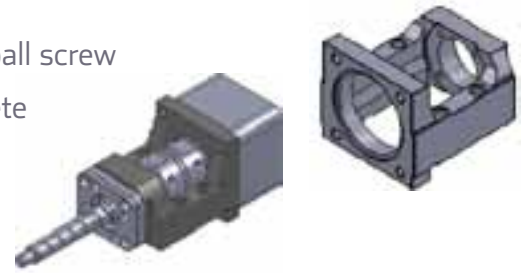
Model No.	Ball screw size	Shaft Ø	D	D1	D2	L	L1	L2	A	W	X	Y	Z	d1	I	V	P	Q
		d																
WBK25DFF	32	25	85	130	90	96	48	18	100	110	11	17	11	57	4	70	M6	12
WBK30DFF	40	30	85	130	90	96	48	18	100	110	11	17	11	57	4	70	M6	12
WBK35DFF	50	35	95	142	102	96	48	18	106	121	11	17	11	69	4	80	M6	12
WBK40DFF	63	40	95	142	102	96	48	18	106	121	11	17	11	69	4	80	M6	12

### TECHNICAL DIMENSIONS

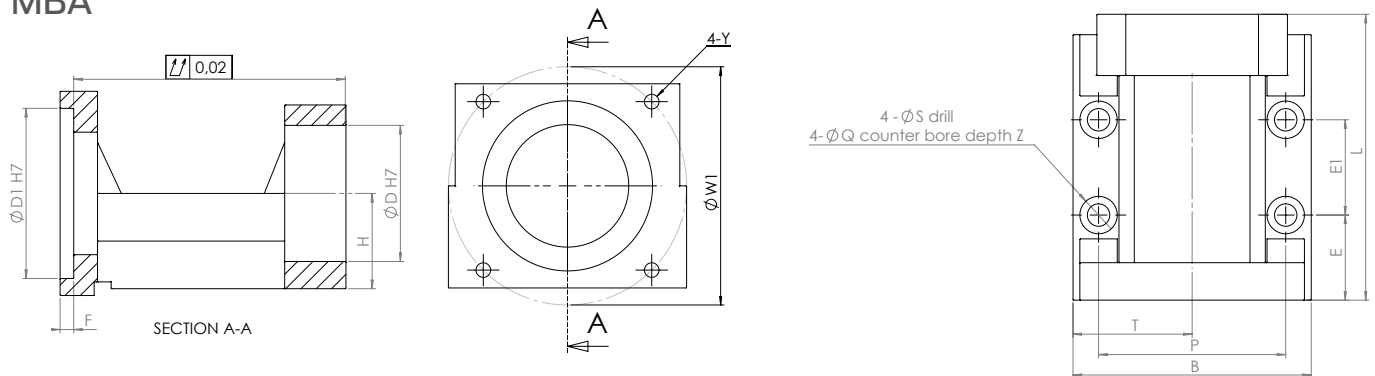
Model No.	Max. Axial Dyn. Load (N)	Max. Recommended Axial Dyn. Load (N)	Preload (N)	Axial Rigidity (N/μm)	Starting Torque (Nm)	Lock nut			Support Bearing	Weight (kg)
						M	D3	L3		
WBK25DFF	83 000	47 000	6 400	2 000	0.5	M25x1.5	45	20	FF25	4.4
WBK30DFF	88 000	48 500	6 800	2 050	0.52	M30x1.5	50	20	FF30	4.4
WBK35DFF	102 000	51 500	7 800	2 400	0.6	M35x1.5	55	22	6207.2RS	5
WBK40DFF	106 000	52 500	8 000	2 450	0.62	M40x1.5	60	22	6210.2RS	5

## MBA and MBB – Motorflange for ball screws

The MBA/MBB- serie of motorflanges are easy to use to your ball screw application. The MBA/MBB motorflange is included in a complete ball screw package. For more details look at page 19.



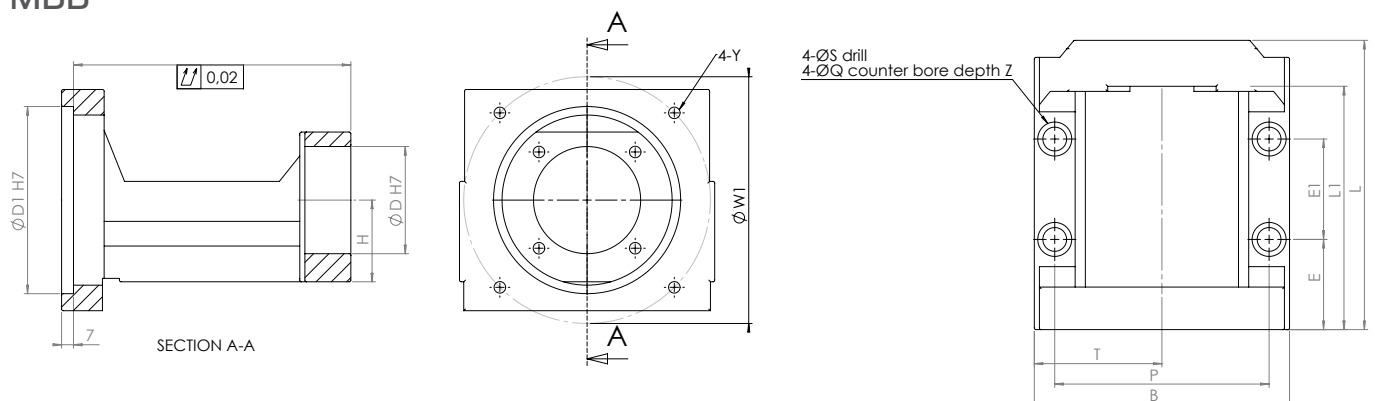
### MBA



#### TECHNICAL DIMENSIONS

Model No.	D1	W1	Y	D	L	H +/-0.02	B	P	T	S	Q	Z	E	EI	F	Weight (Kg)
MBA8-B	30	46	M4	28	61	17	52	41	26	5.5	9.5	2	19	20	4	0.29
MBA10-D	50	70	M5	34	74	22	65	50	32.5	6.6	11	2	24	20	4	0.66
MBA12-D	50	70	M5	36	74	25	65	50	32.5	6.6	11	2	24	20	4	0.71
MBA15-D	50	70	M5	40	84	28	70	55	35	6.6	11	2	25	28	4	1.4
MBA20-E	70	90	M6	57	113	34	88	70	44	8.5	14	2.5	29	42	6	1.61

### MBB

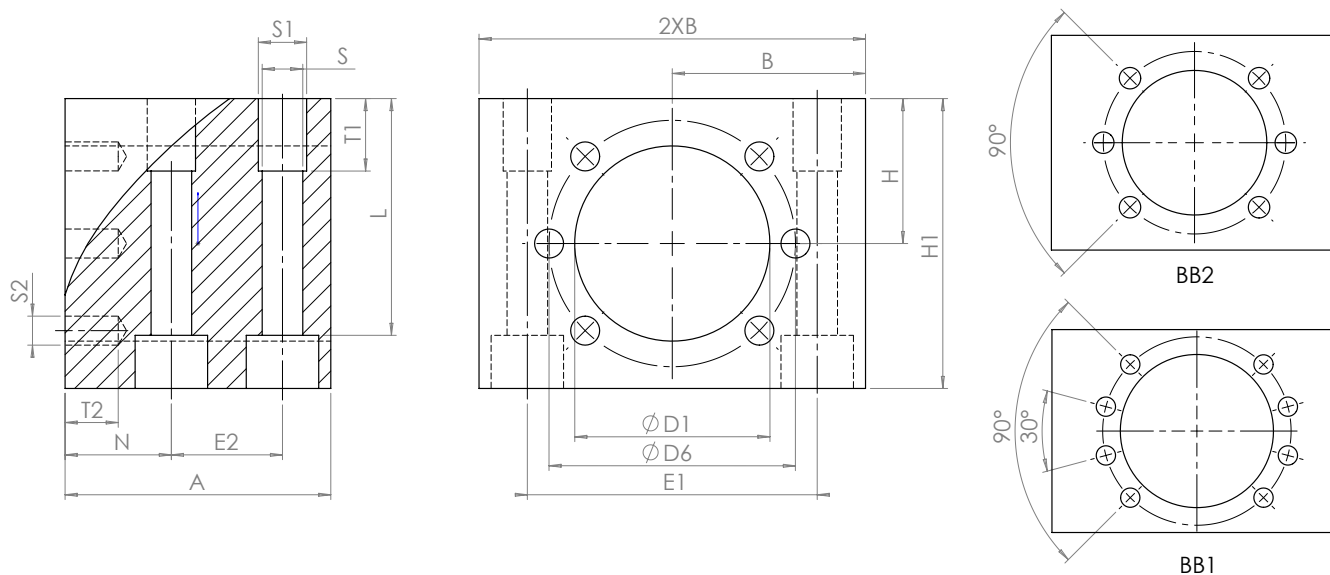


#### TECHNICAL DIMENSIONS

Model No.	D1	W1	Y	D	L	L1	H +/-0.02	B	P	T	S	Q	Z	E	EI	Weight (Kg)
MBB25L-G	110	145	M8	63	170	143	48	150	126	75	14	20	2.5	53	59	6.6
MBB30-H	114.3	200	M12	85	230	189	51	200	170	100	18	26	2.5	75	75	14

## MGD – Ball screw nut bracket

The MGD – Nut bracket unit suits our SFS-serie of ball screws. The Nut bracket is made out of steel, and it is possible to screw from the top and from the bottom.

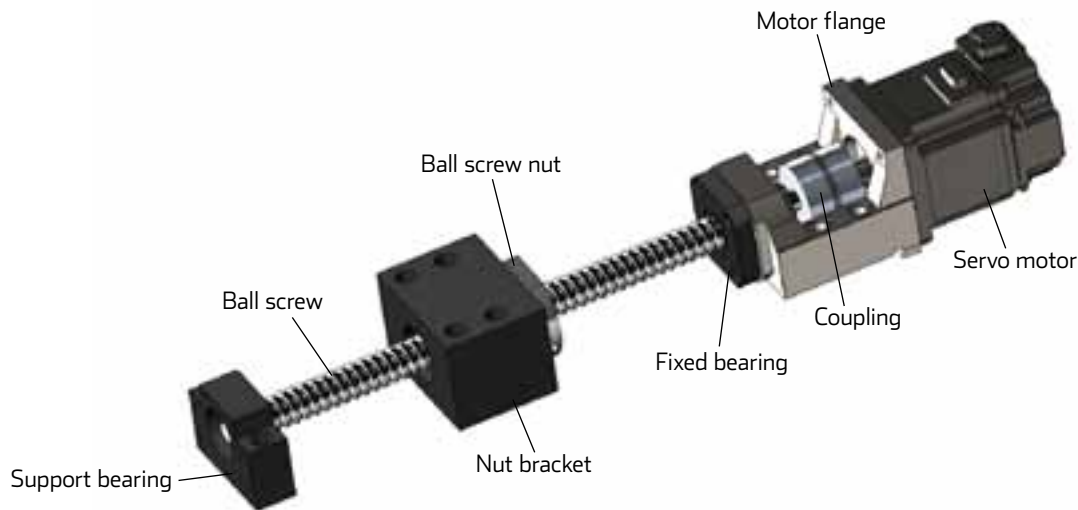


### TECHNICAL DIMENSIONS

Model No.	Ball screw size	D1	D6	A	B	H	H1	E1	E2	N	S	S1	T1	S2	T2	Type	Screw Thru	L	Weight (Kg)
		+/-0.1			+/-0.1	+/-0.1		+/-0.1	+/-0.1										
MGD16	16	28.4	38	50	35	24	46	50	20	20	8.4	M10	15	M5	10	BB2	M8	37	0.91
MGD20	20	36.4	47	55	37.5	28	54	55	23	22	8.4	M10	15	M6	11	BB2	M8	45	1.18
MGD25	25	40.4	51	55	40	30	60	60	23	22	8.4	M10	15	M6	11	BB2	M8	49	1.33
MGD32	32	50.4	65	70	50	35	70	75	30	27	14	M16	20	M8	14	BB2	M12	52	2.77
MGD40	40	63.4	78	80	60	42	84	90	35	31	15	M18	25	M8	17	BB1	M14	66	3.61

## Complete ball screw package, standard (MBA/MBB)

Our complete ball screw package MBA/ MBB-complete are easy to use. The package includes one ball screw and one ball screw nut, two support units, one ball screw nut bracket MGD and motorflange MBA/MBB. The motorflange MBA/MBB is standard made to fit Mitsubishi servo motors which you can get completely mounted from us, or use an adapter plate to fit on all kind of servomotors.



### TECHNICAL DIMENSIONS

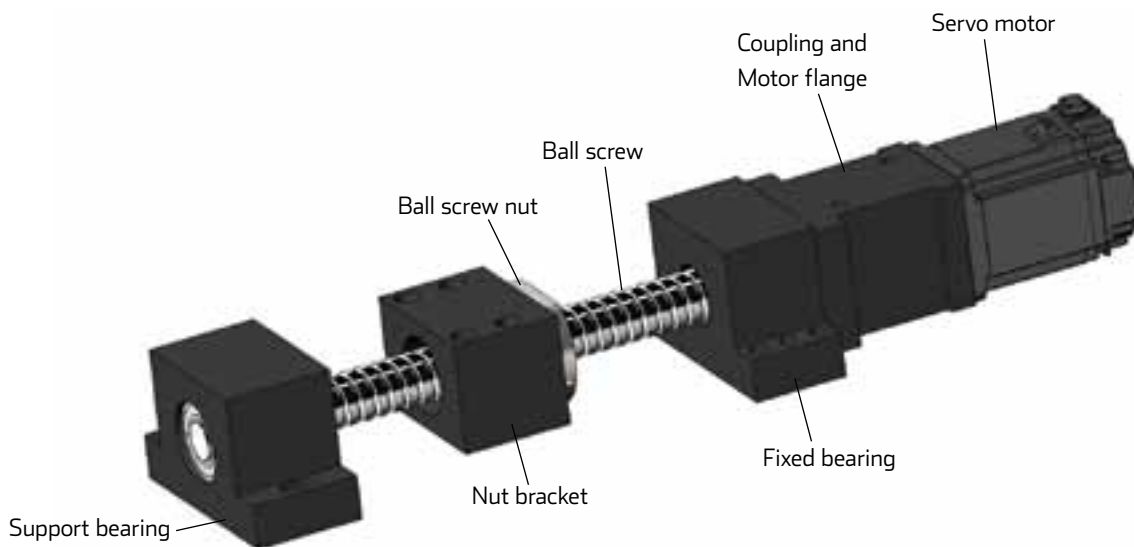
Complete article number	One complete ball screw package standard					Additional	
	These articles are included in article number MBA/MBBxx-x-Comp				Ball screw model/size	Ball screw nut bracket	Servo motor (Mitsubishi)
	Motorflange	Fixed Bearing	Support Bearing	Coupling			
<b>MBA8-B-Comp</b>	MBA8-B	FKA08	EF08	SGS27C 6/8	SFK10	-	HF-KP053/13
<b>MBA10-D-Comp</b>	MBA10-D	FK10	BF10	SGS34C 8/14	SFS12	-	HF-KP23/43
<b>MBA12-D-Comp</b>	MBA12-D	FK12	BF12	SGS34C 10/14	SFS16	MGD16	HF-KP23/43
<b>MBA15-D-Comp</b>	MBA15-D	FK15	BF15	SGS34C 12/14	SFS20	MGD20	HF-KP23/43
<b>MBA20-E-Comp</b>	MBA20-E	FKA20	BF20	SGS45C 17/19	SFS25	MGD25	HF-KP73
<b>MBB25L-G-Comp</b>	MBB25L-G	FK25	BF25	SGL65C 20/24	SFS32	MGD32	HF-SP524/1524
<b>MBB30-H-Comp</b>	MBB30-H	WBK30DF	BF30	SAP94C 25/35	SFS40	MGD40	HF-SP2024/7024

### TECHNICAL DIMENSIONS ON FIXED BEARING

Model No.	Static Load Capacity (N)	Max. Axial Dynamic Load (N)	Max. Recommended Axial Dyn. Load (N)	Coupling	Rec. Rated torque on Coupling (Nm)	Max. Rated torque on Coupling (Nm)	Tightening torque of the fastening screw (Nm)
<b>MBA8-B-Comp</b>	2800	1030	515	SGS27C 6/8	1.5	3	2.5
<b>MBA10-D-Comp</b>	5300	1950	975	SGS34C 8/14	6	12	3
<b>MBA12-D-Comp</b>	6100	2170	1085	SGS34C 10/14	6	12	3
<b>MBA15-D-Comp</b>	7000	2400	1200	SGS34C 12/14	6	12	3
<b>MBA20-E-Comp</b>	16900	5870	2935	SGS45C 17/19	10	20	5
<b>MBB25L-G-Comp</b>	20900	7090	3545	SGL65C 20/24	25	110	15
<b>MBB30-H-Comp</b>	44000	29800	20000	SAP94C 25/35	176	352	15 (4 bolts)

## Complete ball screw package, heavy (KL-F)

Our complete ball screw package heavy KL-XX-complete is suitable for heavy applications with bigger loads or pressing applications. The package includes ball screw and ball screw nut, two support units, ball screw nut bracket MGD and a motorflange. Our motorflange is standard made to fit Mitsubishi servo motors which you can get completely mounted from us, or use an adapter plate to fit on all kind of servomotors.



### TECHNICAL DIMENSIONS

Complete article number	One complete ball screw package heavy					Additional	
	These articles are included in article number KL-xx-Comp				Ball screw model/size	Ball screw nut bracket	Servo Motor (Mitsubishi)
	Motorflange	Fixed Bearing	Support Bearing	Coupling			
<b>KL-25-Comp</b>	MF KL-F25-HF-KP43	KL-F25	KL-L25	BKL-15 14/15	SFS25	MGD25	HF-KP23/43
<b>KL-32-Comp</b>	MF KL-F32-HF-KP73	KL-F32	KL-L32	BKL-30 16/19	SFS32	MGD32	HF-KP73
<b>KL-40-Comp</b>	MF KL-F40-HF-SP0524	KL-F40	KL-L40	BKL-60 24/25	SFS40	MGD40	HF-SP0524/1524

### TECHNICAL DIMENSIONS ON FIXED BEARING

Model No.	Static Load Capacity (N)	Max. Axial Dynamic Load (N)	Max. Recommended Axial Dyn. Load (N)
<b>KL-25-Comp</b>	31 000	18 800	9 400
<b>KL-32-Comp</b>	47 000	26 000	13 000
<b>KL-40-Comp</b>	64 000	29 000	20 000

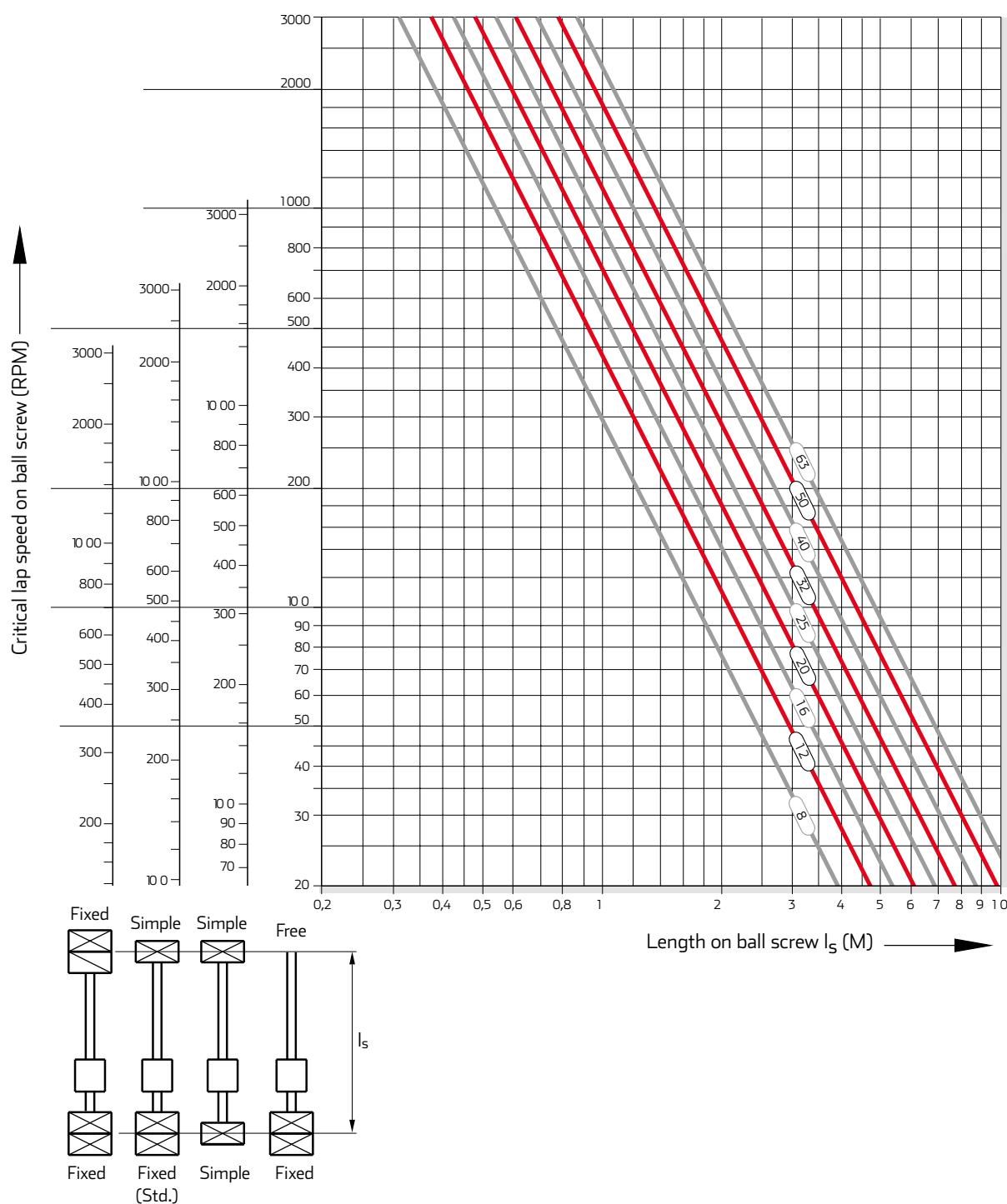
Coupling	Rec. Rated torque on Coupling (Nm)	Max. Rated torque on Coupling (Nm)	Tightening torque of the fastening screw (Nm)
BKL-15 14/15	12	15	8
BKL-30 16/19	24	30	15
BKL-60 24/25	48	60	40



## Critical lap speed

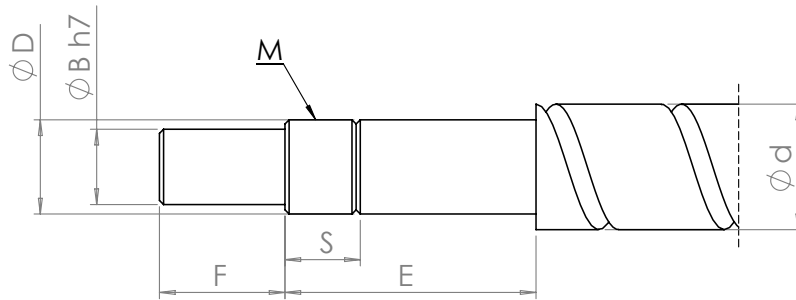
It is necessary to check if the ball screw rotation speed is lower than the critical lap speed.

We recommend 80% or less of the critical lap speed as rotation speed. The diagram below summarizes the allowable rotation speed. Select the allowable speed according to the method of supporting the ball screw.



## End journals for BK and KL-F support units (fixed-side)

We are processing all of our ball screws after our customers request. Please specify the end journals on your order with help from our end journal code, in the below table.

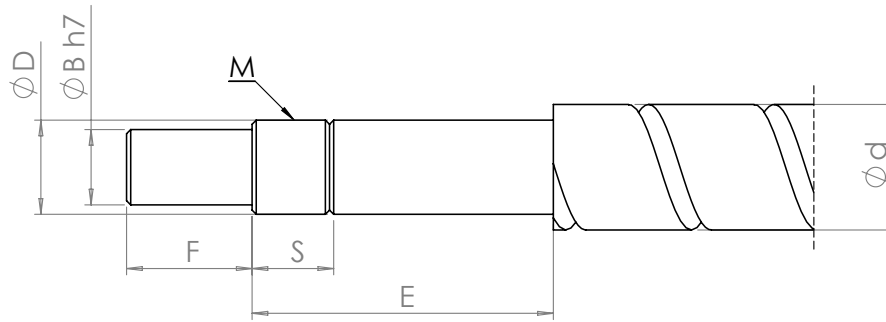


### TECHNICAL DIMENSIONS

Model No.		Ball screw size	Shaft support portion Ø		B	E	F	Metric Screw thread		Aluflex End Journal Code
Type BK	Type KL-F	d	D					M	S	
BK10	-	12	10	-0.008 -0.015	8	36	15	M10x1	12	C1
BK12	-	16	12	-0.008 -0.015	10	36	15	M12x1	12	C1
BK15	-	20	15	-0.008 -0.017	12	40	20	M15x1	12	C1
BK20	-	25	20	-0.008 -0.017	17	53	25	M20x1	15	C1
BK25	-	32	25	-0.008 -0.017	20	66	30	M25x1.5	20	C1
BK30	-	40	30	-0.008 -0.018	25	73	38	M30x1.5	25	C1
BK40	-	50	40	-0.008 -0.018	35	94	50	M40x1.5	30	C1
-	KL-F25	25	17	-0.008 -0.017	15	45	30	M17x1	22	B1
-	KL-F32	32	20	-0.008 -0.018	16	43	35	M20x1	17	B1
-	KL-F40	40	30	-0.008 -0.018	25	50	50	M30x1.5	23	B1

## End journals for FK and EK support units (fixed-side)

We are processing all of our ball screws after our customers request. Please specify the end journals on your order with help from our end journal code, in the below table.



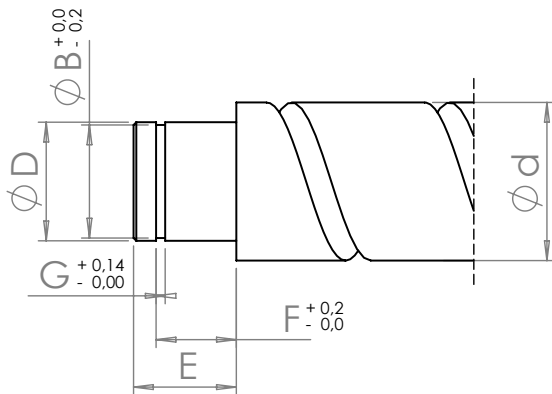
### TECHNICAL DIMENSIONS

Model No.			Ball screw size	Shaft support portion Ø		B	E	F	Metric Screw thread		Aluflex End Journal Code
Type FK	Type EK	Type WBK	d	D					M	S	
FK06	EK06		8	6	-0.008 -0.015	4	28	8	M6x0.75	8	A1
FK08	EK08		10	8	-0.008 -0.015	6	32	9	M8x1	10	A1
FK10	-		12	10	-0.008 -0.015	8	36	15	M10x1	12	A1
FK12	-		16	12	-0.008 -0.015	10	36	15	M12x1	12	A1
FK15	-		20	15	-0.008 -0.017	12	48	20	M15x1	13	A1
FK20	-		25	20	-0.008 -0.017	17	64	25	M20x1	16	A1
FK25	-		32	25	-0.008 -0.017	20	76	30	M25x1.5	20	A1
FK30	-		40	30	-0.008 -0.018	25	73	38	M30x1.5	25	A1
-	-	WBK-25DFF	32	25	-0.008 -0.017	20	119	30	M25x1.5	26	D1
-	-	WBK-30DFF	40	30	-0.008 -0.018	25	119	38	M30x1.5	26	D1
-	-	WBK-35DFF	50	35	-0.008 -0.018	30	122	45	M35x1.5	30	D1
-	-	WBK-40DFF	63	40	-0.008 -0.018	35	122	50	M40x1.5	30	D1

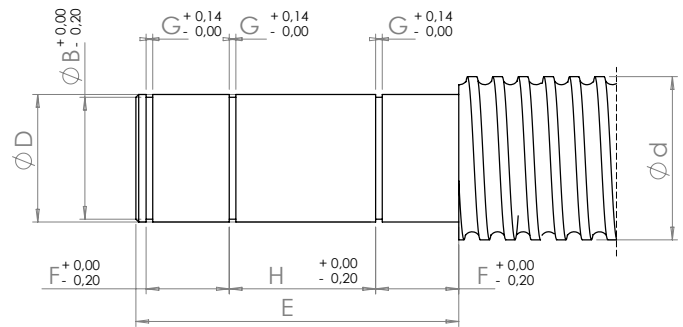
## End journals for BF and KL-L support units (support side)

We are processing all of our ball screws after our customers request. Please specify the end journals on your order with help from our end journal code, in the below table.

BF



KL-L

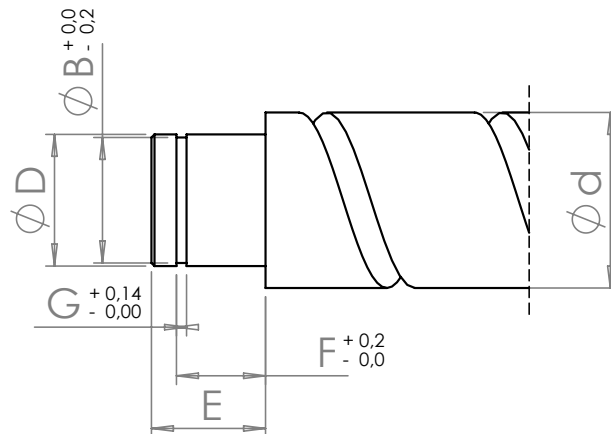


### TECHNICAL DIMENSIONS

Model No.		Ball screw size	Shaft support portion Ø		E	B	F	G	Aluflex End Journal Code	H
Type BF	Type KL-F	d	D							
BF10	-	12	8	-0.008 -0.015	10	7.6	7.9	0.9	M	-
BF12	-	16	10	-0.008 -0.015	11	9.6	9.15	1.15	M	-
BF15	-	20	15	-0.008 -0.017	13	14.3	10.15	1.15	M	-
BF20	-	25	20	-0.008 -0.017	16	19	13.35	1.35	M	-
BF25	-	32	25	-0.008 -0.017	20	23.9	16.35	1.35	M	-
BF30	-	40	30	-0.008 -0.018	21	28.6	17.75	1.75	M	-
BF40	-	50	40	-0.008 -0.018	23	38	19.95	1.95	M	-
-	KL-L25	25	17	-0.008 -0.018	51	16	13.1	1.3	E	22.9
-	KL-L32	32	25	-0.008 -0.018	63.4	24	16.3	1.3	E	28.7
-	KL-L40	40	30	-0.008 -0.018	72	29	17.6	1.6	E	34.4

## End journals for FF and EF support units (support side)

We are processing all of our ball screws after our customers request. Please specify the end journals on your order with help from our end journal code, in the below table.



### TECHNICAL DIMENSIONS

Model No.			Ball screw size	Shaft support portion Ø		E	B	F	G	Aluflex End Journal Code
Type FF	Type EF	Loose Bearing	d	D						
FF06	EF06		8	6	-0.008 -0.015	9	5.7	6.8	0.8	S
FF06	EF08		10	6	-0.008 -0.015	9	5.7	6.8	0.8	S
FF10	-		12	8	-0.008 -0.015	10	7.6	7.9	0.9	S
FF12	-		16	10	-0.008 -0.015	11	9.6	9.15	1.15	S
FF15	-		20	15	-0.008 -0.017	13	14.3	10.15	1.15	S
FF20	-		25	20	-0.008 -0.017	19	19	15.35	1.35	S
FF25	-		32	25	-0.008 -0.017	20	23.9	16.35	1.35	S
FF30	-		40	30	-0.008 -0.018	21	28.6	17.75	1.75	S
-	-	6207.2RS	50	35	-0.008 -0.018	22	33	18.6	1.6	N
-	-	6210.2RS	63	50	-0.008 -0.018	27	47	22.15	2.15	N

## Article number

Ball screw configuration, the chart below describes how to configure the ball screw.  
Use the complete code when ordering.

### Code for complete ball screw with ballnut and end journal

	SFS	R	025	05	C1	D	F	C7	-600-	D	P0	M	C1
Nut type codes: SFS, SFV, SFU, SFK													
Direction of helix: R:right, L: left													
Ball screw size (mm)													
Lead (mm)													
No. of Turn (circuits) or Turn x Row: Turn: T:1, A:1.5 (or 1.7/1.8), B:2.5/2.8, C:3.8, D:4.8 ex: (2.5 x 2 =B2)													
Flange type: D: Double cutting													
Produce code: F: Rolled													
Accuracy grade code: C7													
Overall length of shaft (mm)													
Position on ball nut flange: D: Flange point to fixed side S: Flange point to support side													
Axial clearence and preload code: P0, P1													
Aluflex end journal code support side (see page 24-25)													
Aluflex end journal code fixed side (see page 22-23)													



## Axial play and clearance

A standard ball screw (P0) has an axial play between 0 and maximum 0,12 mm.

If this is suitable for your application you choose our standard ball screw P0 Quality.

If you need a ball screw with zero play you choose our P1 Quality on your ball screw.

P1 quality includes additional costs on your order.

### Different grade on ball screws

Quality	P0	P1
Axial Play	Yes	No
Preload	No	No

### Combination of Accuracy grade and Axial play

Ball screw diameter	Rolled ball screw clearance in the axial direction	
	Quality P0	Quality P1
8 - 10 miniature ball screw	-	0 Play (Standard)
12 - 40 medium size ball screw	0 - 0.08	0 Play
50 - 63 big size ball screw	0 - 0.12	0 Play

## Lubrication advice

### Lubrication interval for ball screw

The table below shows the recommended lubrication interval for AluFlex ball screw. When contradictive, always choose the biggest load or highest RPM.

Temperature	10-40° C	
Rotation speed	under 600 rpm	over 600 rpm
Ball screw size	Load	Load
8, 10, 12, 15 and 16	up to 15 kg	over 15 kg
20	up to 60 kg	over 60 kg
25 and 32	up to 100 kg	over 100 kg
40 and 50	up to 250 kg	over 250 kg
63	up to 400 kg	over 400 kg
Lubrication interval every	1000 hours	750 hours

### Amount of lubricant for ball screw

The amount of lubricant in grams each time regreasing takes place. Keep in mind to not exceed the lubrication. It can cause problems.

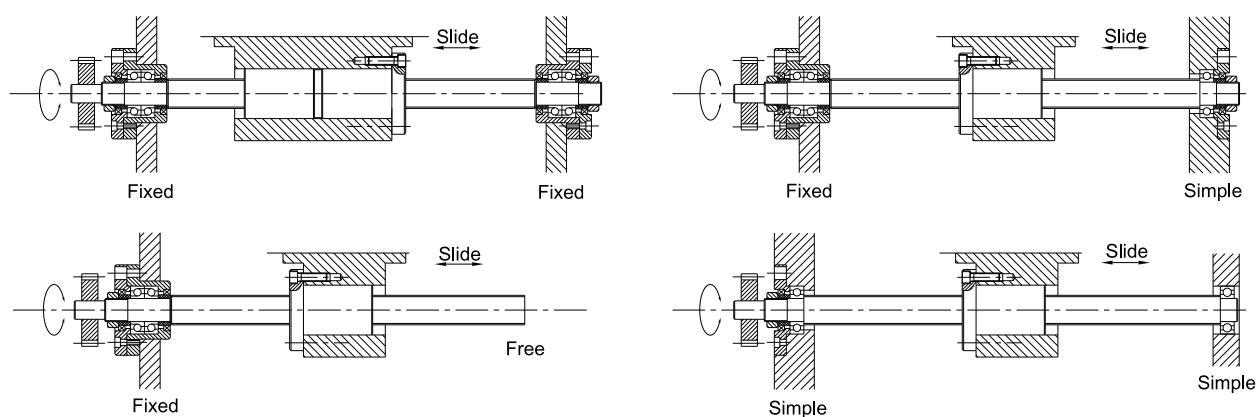
Size	Amount of lubricant
8, 10, 12, 15 and 16	4 gm
20	7 gm
25	9 gm
32	13 gm
40	16 gm
50	19 gm
63	25 gm

### Service

The ball screw lubricates through one of the grease nipples in the the ball nut. Use ball bearing grease as lubricant. Keep in mind that it must not contain graphite or molybdenum disulphide.

## Ball screw mounting method

The most common mounting of ball screws are shown in figure below.



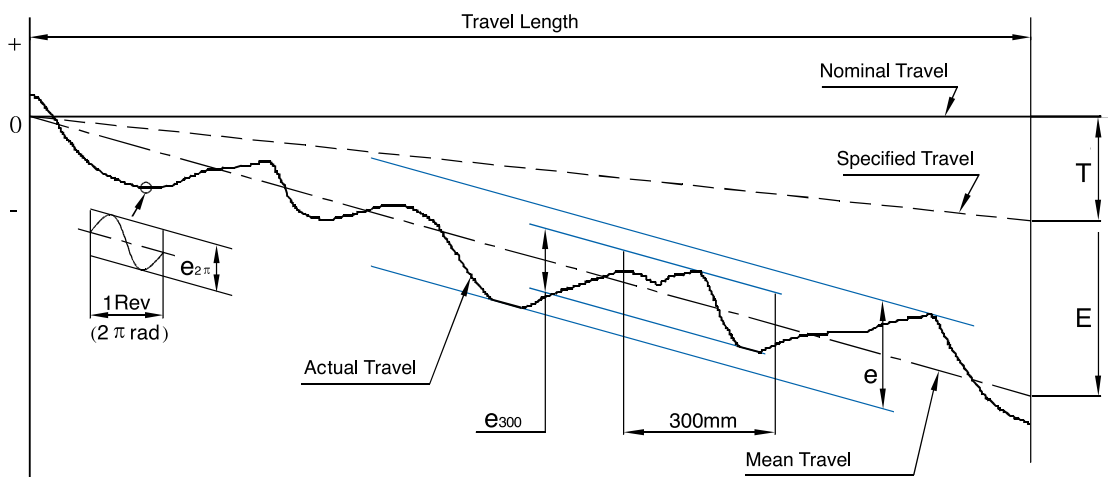
## Lead and accuracy

Lead accuracy of our ball screws (grade C7) is specified in 4 basic terms ( $E$ ,  $e$ ,  $e_{300}$ ,  $e_{2\pi}$ ).

The terms are defined in the table below. Tolerance of deviation ( $\pm E$ ) and variation ( $e$ ) of accumulated reference travel are shown in the figure below.

Accumulated travel deviations for grade C7 are specified only by the allowable value per 300 mm, measured within any portion of the thread length. For C7 it is 0.05 mm.

### Travel variation on ball screw grade C7



Unit:  $\mu\text{m}$

Grade on ball screw	C7
$e$	50

### Definition of terms for lead accuracy

Terms	Reference	Definition
<b>Travel compensation</b>	T	Travel compensation is the difference between specified and nominal travel within useful travel. A slightly smaller value compared to the nominal travel is often selected by the customer to compensate for an expected elongation caused by temperature rise or external load. Therefore "T" is usually a negative value. <b>Note:</b> If no compensation is needed, specified travel is the same as nominal travel.
<b>Actual travel</b>		Actual travel is the axial displacement of the nut relative to the screw shaft.
<b>Mean travel</b>		Mean travel is the linear best fit line of actual. This could be obtained by the least squares method. This line represents the tendency of actual travel.
<b>Mean travel deviation</b>	E	Mean travel deviation is the difference between mean travel and specified travel within travel length.
<b>Travel variations</b>	$e$ $e_{300}$ $e_{2\pi}$	Travel variations is the band of 2 lines drawn parallel to the mean travel, on the plus and minus side. Maximum width of variation over the travel length. Actual width of variation for the length of 300 mm taken anywhere within the travel length. Wobble error, actual width of variation for one revolution ( $2\pi$ radian).

## Lifetime calculation

The lifetime of a ball screw is generally expressed by the total number of revolutions. The rotation hours or total travel distance may also be used to express lifetime. See calculation below.

$$L = \left( \frac{Ca}{Pa \times fw} \right)^3 \times 10^6$$

$$L_t = \frac{L}{60n}$$

$$L_s = \frac{L \times l}{10^6}$$

L: Rated lifetime in revolutions on ball screw

$L_s$ : Life in travel distance (Km)

$P_a$ : Axial load (N)

$f_w$ : Load factor (factor depending on operation conditions)

$L_t$ : Life in hours (h)

$C_a$ : Basic dynamic load rating (N)

$n$ : Rotation speed (rpm)

$l$ : Lead on ball screw (mm)

### Factor of safety, dynamic load ( $f_{sd}$ )

Load factor	$f_{sd}$
Smooth operation without impact	1.0 ~ 1.2
Normal operation	1.2 ~ 1.5
Operation with impact and vibration	1.5 ~ 3.0

Basic dynamic load rating  $C_a$  = Average load  $\times f_{sd}$

### Factor of safety, static load ( $f_{ss}$ )

Usage	Operation	$f_{ss}$
Normal	Normal operation	1.0 ~ 1.3
	Operation with impact and vibration	2.0 ~ 3.0
Frequent	Normal operation	1.0 ~ 1.5
	Operation with impact and vibration	2.5 ~ 7.0

Basic static load rating  $C_{oa}$  = Max load  $\times f_{ss}$

## Torque on ball screw shaft

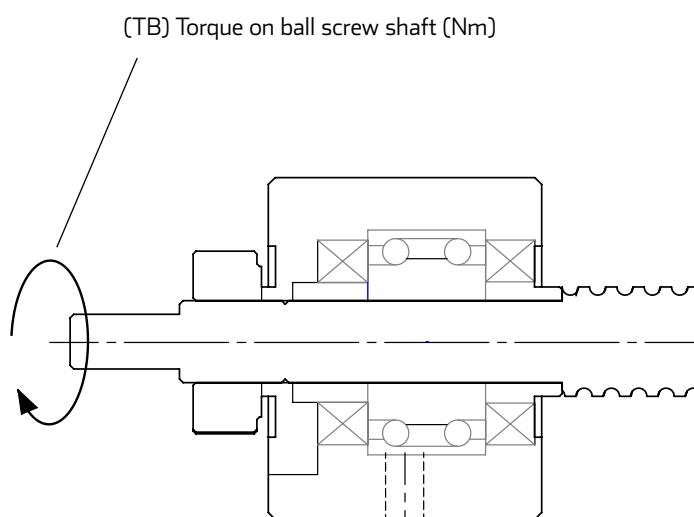
To calculate the torque on the ball screw shaft, we recommend you to use the below calculation.

$$\frac{F \times l}{2\,000 \times \pi \times 0.9} = \text{(TB) Torque on ball screw shaft (Nm)}$$

F = Axial load on ball screw (N)

l = lead on ball screw (mm)

(example: Ball screw SFS2010, l = 10)



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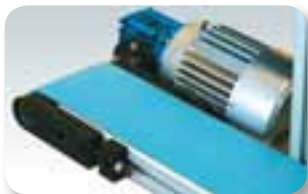
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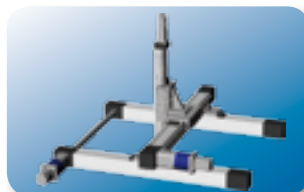
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