

Ballscrews

Shaft ends and accessories

8. Shaft ends and accessories

8.1 Shaft ends and bearing configuration

To reduce the amount of design work required, we provide standardised end machining processes and bearing units. We recommend the "B", "E" and "F" bearing series for simple transport applications and low axial forces. The SFA and SLA bearing units are suited to more challenging precision applications. The WBK series is available for heavy-duty applications.

When selecting the suitable bearing type, the permissible axial force of the fixed bearing must also be taken into account.

Table 8.1 Overview of standard shaft ends for SFA, SLA bearing series

<p>Supported bearing type S1 Bearing: deep groove ball bearing 60.. or 62.. For SLA bearing unit</p>	<p>Fixed bearing type S2 Bearing: ZKLF.. or ZKLN.. For SFA bearing unit</p>	<p>Fixed bearing type S3 Bearing: ZKLF.. or ZKLN.. For SFA bearing unit</p>
<p>Supported bearing type S11 Bearing: deep groove ball bearing 60.. or 62.. For SLA bearing unit</p>	<p>Fixed bearing type S21 Bearing: ZKLF.. or ZKLN.. For SFA bearing unit</p>	<p>Supported bearing type S5 Bearing: deep groove ball bearing 62.. For SLA bearing unit</p>

Example: Designation of shaft end, type S2, with the fit diameter $d = 20$: S2-20

When using bearings other than the specified bearing units, it must be checked whether the size of the bearing installation surface is sufficient.

Table 8.2 Dimensions of standard shaft ends for SFA, SLA bearing series

Shaft end type	Ballscrew nominal \emptyset	d	D2	D3	L1	L2	L3	L5	L12	L15	DE	LE	LA	LP	LZ	B x T	Recess R
S_-06	12	6	M6 x 0.5	5 j6	31	37	—	8	—	6	5.7 h10	0.80	26	—	16	—	10002475
S_-10	15, 16	10	M10 x 0.75	8 j6	39	50	30	12	12	9	9.6 h10	1.10	32	14	20	2 x 1.2	10002475
S_-12	20	12	M12 x 1	10 j6	43	58	35	13	12	10	11.5 h11	1.10	35	16	23	3 x 1.8	10002475
S_-17	25	17	M17 x 1	14 j6	60	73	43	15	20	12	16.2 h11	1.10	50	20	30	5 x 3	10002475
S_-20	32	20	M20 x 1	14 j6	62	76	46	17	20	14	19 h12	1.30	50	20	30	5 x 3	10002476
S_-25	40	25	M25 x 1.5	20 j6	83	96	46	19	20	15	23.9 h12	1.30	71	36	50	6 x 3.5	10002476
S_-30	40	30	M30 x 1.5	25 j6	95	108	48	20	22	16	28.6 h12	1.60	82	45	60	8 x 4	10002476
S_-40	50	40	M40 x 1.5	32 k6	119	135	55	22	24	18	37.5 h12	1.85	104	56	80	10 x 5	10002476
S_-50	63	50	M50 x 1.5	40 k6	142	155	55	25	24	20	47 h12	2.15	124	70	100	12 x 5	10002476
S_-60	80	60	M60 x 2	50 k6	155	177	67	28	25	22	57 h12	2.15	135	70	110	14 x 5.5	10002476

Unit: mm

It goes without saying that we also machine the shaft ends to your drawings and individual requirements.

Table 8.3 Overview of standard shaft ends for EK, BK, FK, EF, BF, FF bearing series

<p>Fixed bearing type E8 Bearing: 70.. For EK, FK bearing units</p>	<p>Fixed bearing type E9 Bearing: 72.. For BK bearing unit</p>	<p>Supported bearing type E10 Bearing: deep groove ball bearing 60.. or 62.. For EF, BF, FF bearing units</p>
<p>Fixed bearing type E81 Bearing: 70.. For EK, FK bearing units</p>	<p>Fixed bearing type E91 Bearing: 72.. For BK bearing unit</p>	

Example: Designation of shaft end, type S3, with the fit diameter $d = 10$: S3-10

When using bearings other than the specified bearing units, it must be checked whether the size of the bearing installation surface is sufficient.

Table 8.4 Dimensions of standard shaft ends for EK, BK, FK, EF, BF, FF bearing series

Shaft end type	Ballscrew nominal \varnothing	d	D4	D5	D10	L8	L9	L10	L16	L17	DE	LB	LC	LP	B x T	C	Recess R
E_-08	12	8	6	M8 x 1	6	41	—	9	6	0.80	5.8	9	19	—	—	5.5	10002475
E_-10	15, 16	10	8	M10 x 1	8	56	—	10	7	0.90	7.7	20	31	14	2 x 1.2	5.5	10002475
E_-12	16 ¹⁾	12	10	M12 x 1	10	59	—	11	8	1.15	9.6	23	34	16	3 x 1.8	5.5	10002475
E_-15	20	15	12	M15 x 1	15	70	—	13	9	1.15	14.3	23	36	16	4 x 2.5	10.0	10002475
E_-20	25	20	17	M20 x 1	20	92	—	19	14	1.35	19.0	30	47	20	5 x 3.0	11.0	10002476
E_-25	32	25	20	M25 x 1.5	25	126	115	20	15	1.35	23.9	50	70	36	6 x 3.5	15.0 (9.0) ³⁾	10002476
E_-30	40	30	25	M30 x 1.5	30	132	132	21	16	1.75	28.6	60	85	45	8 x 4.0	9.0	10002476
E_-40	50	40	35 ²⁾	M40 x 1.5	40	—	173	23	18	1.95	38.0	80	115	56	10 x 5	15.0	10002476

Unit: mm

¹⁾ Depending on actual shaft outer diameter $d_{s \min} = 15.5$

²⁾ Tolerance k6

³⁾ For BK 25

It goes without saying that we also machine the shaft ends to your drawings and individual requirements.

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Shaft ends and accessories

Table 8.5 Overview of standard shaft ends for WBK bearing series

Fixed bearing type W1 Bearing: BSB.. For WBK_DF bearing unit	Fixed bearing type W2 Bearing: BSB.. For WBK_DFD bearing unit	Fixed bearing type W3 Bearing: BSB.. For WBK_DFF bearing unit
Fixed bearing type W11 Bearing: BSB.. For WBK_DF bearing unit	Fixed bearing type W21 Bearing: BSB.. For WBK_DFD bearing unit	Fixed bearing type W31 Bearing: BSB.. For WBK_DFF bearing unit

Example: Designation of shaft end, type W2, with the fit diameter $d = 20$: W2-20

When using bearings other than the specified bearing units, it must be checked whether the size of the bearing installation surface is sufficient.

Table 8.6 Dimensions of standard shaft ends for WBK bearing series

Shaft end type	Ballscrew nominal \varnothing	d	$D4$	$D5$	$L11$	$L12$	$L13$	LB	LC	LP	$B \times T$	Recess R
W_-15	20	15	12	M15 \times 1	104	—	—	23	46	16	4 \times 2.5	10002475
W_-17	25	17	14	M17 \times 1	111	—	—	30	53	20	5 \times 3.0	10002475
W_-20	25	20	17	M20 \times 1	111	—	—	30	53	20	5 \times 3.0	10002476
W_-25	32	25	20	M25 \times 1.5	139	154	—	50	76	36	6 \times 3.5	10002476
W_-30	40	30	25	M30 \times 1.5	149	164	—	60	86	45	8 \times 4.0	10002476
W_-35	45	35	30	M35 \times 1.5	152	167	182	60	90	45	8 \times 4.0	10002476
W_-40	50	40	35 ¹⁾	M40 \times 1.5	172	187	202	80	110	56	10 \times 5.0	10002476

Unit: mm

¹⁾ Tolerance k6

It goes without saying that we also machine the shaft ends to your drawings and individual requirements.

Table 8.7 HIWIN recesses

HIWIN recess 10002475	HIWIN recess 10002476

Table 8.8 Overview of bearing type and associated end machining for SLA, SFA bearing units

Ballscrew nominal \emptyset	Fixed bearing		Supported bearing	
	Pillow block	End machining	Pillow block	End machining
12	SFA06	S21-06	SLA06	S5-06 / S11-06
15, 16	SFA10	S2-10 / S3-10 / S21-10	SLA10	S1-10 / S5-10 / S11-10
20	SFA12	S2-12 / S3-12 / S21-12	SLA12	S1-12 / S5-12 / S11-12
25	SFA17	S2-17 / S3-17 / S21-17	SLA17	S1-17 / S5-17 / S11-17
32	SFA20	S2-20 / S3-20 / S21-20	SLA20	S1-20 / S5-20 / S11-20
40	SFA30	S2-30 / S3-30 / S21-30	SLA30	S1-30 / S5-30 / S11-30
50	SFA40	S2-40 / S3-40 / S21-40	SLA40	S1-40 / S5-40 / S11-40

Table 8.9 Overview of bearing type and associated end machining for EK, BK, FK, EF, BF, FF bearing series

Ballscrew nominal \emptyset	Fixed bearing				Supported bearing			
	Pillow block	End machining	Flange bearing	End machining	Pillow block	End machining	Flange bearing	End machining
12	EK08	E81-08	FK08	E81-08	EF08	E10-08	—	—
15, 16	EK10	E8-10 / E81-10	FK10	E8-10 / E81-10	EF10	E10-10	FF10	E10-10
16 ¹⁾	EK12	E8-12 / E81-12	FK12	E8-12 / E81-12	EF12	E10-12	FF12	E10-12
20	EK15	E8-15 / E81-15	FK15	E8-15 / E81-15	EF15	E10-15	FF15	E10-15
25	EK20	E8-20 / E81-20	FK20	E8-20 / E81-20	EF20	E10-20	FF20	E10-20
32	BK25	E9-25 / E91-25	FK25	E8-25 / E81-25	BF25	E10-25	FF25	E10-25
40	BK30	E9-30 / E91-30	FK30	E8-30 / E81-30	BF30	E10-30	FF30	E10-30
50	BK40	E9-40 / E91-40	—	—	BF40	E10-40	—	—

¹⁾ Depending on actual shaft outer diameter $d_{s \min} = 15.5$

Table 8.10 Overview of bearing type and associated end machining for WBK bearing unit

Ballscrew nominal \emptyset	Flange bearing	End machining
20	WBK15DF	W1-15 / W11-15
25	WBK17DF	W1-17 / W11-17
25	WBK20DF	W1-20 / W11-20
32	WBK25DF	W1-25 / W11-25
32	WBK25DFD	W2-25 / W21-25
40	WBK30DF	W1-30 / W11-30
40	WBK30DFD	W2-30 / W21-30
45	WBK35DF	W1-35 / W11-35
45	WBK35DFD	W2-35 / W21-35
45	WBK35DFF	W3-35 / W31-35
50	WBK40DF	W1-40 / W11-40
50	WBK40DFD	W2-40 / W21-40
50	WBK40DFF	W3-40 / W31-40