

## P3 Ball Screw shafts with lead accuracy 0,012/300mm

FK type nuts, flanged single with standard leads



General Details		
Nom Dia (mm)	Nom Lead (mm)	Ball Size (mm)
16	5	3,500
20	5	3,500
25	5	3,500
32	5	3,500
32	10	5,556
40	5	3,500
40	10	7,144
50	10	7,144
63	10	7,144

Shaft Details			
Outside Dia d <sub>1</sub> (mm)	Root Dia d <sub>3</sub> (mm)	Std Shaft Length (mm)	Max Shaft Length (mm)
15,6	12,7	1500	3000
19,6	16,7	2000	4000
24,6	21,7	2500	5000
31,6	28,7	3000	6000
31,6	27,1	3000	6000
39,6	36,7	3000	6000
39,6	34,0	3000	6000
49,5	43,8	3000	6000
62,5	56,9	6000	6000

FH type nuts, flanged single with high leads



20	20	3,500
25	10	3,500
25	25	3,500
32	20	5,556
32	32	5,556
40	20	5,556
50	20	6,350
63	20	7,144

19,6	16,7	2000	4000
24,6	21,7	2500	5000
24,6	21,7	2500	5000
31,6	27,1	3000	6000
31,6	28,5	3000	6000
39,6	35,2	3000	6000
49,5	44,6	3000	6000
62,5	56,9	3000	6000

FL type nuts, flanged single with integral preload



16	5	3,50
20	5	3,50
25	5	3,50
32	5	3,500
32	10	5,556
40	5	3,500
40	10	7,144
50	10	7,144
63	10	7,144

15,6	12,7	1500	3000
19,6	16,7	2000	4000
24,6	21,7	2500	5000
31,6	28,7	3000	6000
31,6	27,1	3000	6000
39,6	36,7	3000	6000
39,6	34,0	3000	6000
49,5	43,8	3000	6000
62,5	56,9	6000	6000

ZG type nuts, cylindrical single with external threads



*12	4	1,984
16	5	3,500
20	5	3,500
25	5	3,500
25	10	3,500
32	5	3,500
32	10	5,556
40	5	3,500
40	10	7,144
50	10	7,144
63	10	7,144

11,6	9,7	1500	3000
15,6	12,7	1500	3000
19,6	16,7	2000	4000
24,6	21,7	2500	5000
24,6	21,7	2500	5000
31,6	28,7	3000	6000
31,6	27,1	3000	6000
39,6	36,7	3000	6000
39,6	34,0	3000	6000
49,5	43,8	3000	6000
62,5	56,9	6000	6000

\*without wiper

## P3 Ball Screw nuts with axial play or light / medium preload

Key to nut dimensions on fold out page 16

Nut Dimensions									
D <sub>1</sub> g6 (mm)	D <sub>4</sub> (mm)	D <sub>5</sub> (mm)	D <sub>6</sub> h13 (mm)	L ±1 (mm)	L <sub>m</sub> +1 (mm)	L <sub>1</sub> +2 (mm)	L <sub>3</sub> (mm)	L <sub>7</sub> h13 (mm)	L <sub>8</sub> h13 (mm)
28	38	5,5	48	48,5	33,0	10	5,5	10	40
36	47	6,6	58	48,5	33,0	10	5,5	10	44
40	51	6,6	62	49,0	33,0	10	6,0	10	48
50	65	9,0	80	57,0	39,0	10	6,0	12	62
50	65	9,0	80	73,0	55,0	16	6,0	12	62
63	78	9,0	93	66,0	45,0	10	7,0	14	70
63	78	9,0	93	88,5	67,5	16	7,0	14	70
75	93	11,0	110	92,0	69,0	16	7,0	16	85
90	108	11,0	125	103,5	78,5	16	7,0	18	95

Technical Specification				
No Of Turns	Dynamic Load Rating (kN)	Static Load Rating (kN)	Max Axial Play (mm)	Max Preload Torque (Nm)
3,0	9,5	10,9	0,09	0,05
3,0	11,5	15,5	0,09	0,07
3,0	13,1	20,2	0,09	0,09
4,0	19,3	36,3	0,09	0,16
3,0	26,4	39,0	0,15	0,21
5,0	26,3	59,2	0,09	0,26
4,0	64,9	109,0	0,18	0,61
4,0	66,4	134,3	0,18	0,85
5,0	93,8	229,7	0,18	1,43

Light preload limits - between zero backlash to maximum preload torque figure

36	47	6,6	58	59,0	35,0	20	14,0	10	44
40	51	6,6	62	51,0	25,0	9	16,0	10	48
40	51	6,6	62	71,0	45,5	20	15,5	10	48
56	71	9,0	86	83,0	52,0	25	19,0	12	68
56	71	9,0	86	85,5	57,5	25	14,0	12	68
63	78	9,0	93	83,0	49,5	25	19,5	14	70
75	93	11,0	110	85,0	47,0	16	22,0	16	85
95	115	13,5	135	86,0	42,0	18	24,0	20	100

3,6	11,5	17,5	0,09	0,07
5,6	22,9	41,2	0,09	0,13
3,6	13,0	22,6	0,09	0,09
5,6	47,2	83,2	0,15	0,35
3,6	20,0	39,0	0,15	0,17
5,6	52,2	103,6	0,15	0,43
5,6	78,8	188,7	0,16	0,85
5,6	103,1	270,8	0,18	1,40

Medium preload limits - within the indicated torque band

28	38	5,5	48	55,0	39,5	10	5,5	10	40
36	47	6,6	58	68,5	53,0	10	5,5	10	44
40	51	6,6	62	69,5	53,5	10	6,0	10	48
50	65	9,0	80	83,0	65,0	10	6,0	12	62
50	65	9,0	80	105,5	87,5	16	6,0	12	62
63	78	9,0	93	97,0	76,0	10	7,0	14	70
63	78	9,0	93	142,0	121,0	16	7,0	14	70
75	93	11,0	110	144,0	121,0	16	7,0	16	85
90	108	11,0	125	166,0	141,0	16	7,0	18	95

Torque Band (Nm)

2+2	6,7	7,2	0,03-0,09
3+3	11,5	15,5	0,07-0,13
3+3	12,6	19,1	0,12-0,18
4+4	19,3	36,4	0,21-0,32
3+3	19,3	36,3	0,27-0,41
5+5	26,3	59,2	0,34-0,51
4+4	64,9	109,0	0,81-1,22
4+4	66,4	134,3	1,13-1,70
5+5	93,8	229,7	1,90-2,85

Nut Dimensions							
D <sub>1</sub> h12 (mm)	D <sub>11</sub> (mm)	D <sub>12</sub> (mm)	D <sub>13</sub> ±0.1 (mm)	L ±1 (mm)	L <sub>11</sub> ±0.5 (mm)	L <sub>12</sub> ±2 (mm)	L <sub>13</sub> ±2 (mm)
25	M20x1	M6x1	n/a	34,0	10,0	5	n/a
32	M30x1,5	M6x1	4	57,5	16,5	10,5	22,0
38	M35x1,5	M6x1	4	57,5	16,5	10,5	22,0
42	M40x1,5	M6x1	4	63,5	17,0	10,5	23,0
42	M40x1,5	M6x1	4	61,0	17,0	10,0	21,0
52	M48x1,5	M6x1	5	65,5	19,0	10,5	23,0
52	M48x1,5	M6x1	5	85,0	19,0	12,0	43,0
58	M56x1,5	M8x1	5	67,5	19,0	12,0	22,5
65	M60x2,0	M8x1	6	105,5	27,0	13,0	43,0
78	M72x2,0	M8x1	6	118,0	29,0	13,0	53,0
92	M85x2,0	M8x1	6	118,0	29,0	13,0	53,0

Technical Specification				
No Of Turns	Dynamic Load Rating (kN)	Static Load Rating (kN)	Max Axial Play (mm)	Max Preload Torque (Nm)
3,0	3,5	4,0	0,07	0,03
4,0	12,1	14,5	0,09	0,06
4,0	14,8	20,7	0,09	0,07
5,0	20,4	33,7	0,09	0,10
6,0	19,9	31,8	0,09	0,14
5,0	23,3	45,5	0,09	0,18
4,0	33,8	52,0	0,15	0,25
5,0	26,3	59,2	0,09	0,25
5,0	78,6	136,2	0,18	0,75
6,0	97,8	213,2	0,18	0,95
6,0	109,7	275,6	0,18	1,60

## P5/T5 Ball Screw shafts with lead accuracy 0,023/300mm



General Details		
Nom Dia (mm)	Nom Dia (mm)	Ball Size (mm)
16	5	3,500
20	5	3,500
25	5	3,500
32	5	3,500
32	10	5,556
40	5	3,500
40	10	7,144
50	10	7,144
63	10	7,144

Shaft Details			
Outside Dia d <sub>1</sub> (mm)	Root Dia d <sub>3</sub> (mm)	Std Shaft Length (mm)	Max Shaft Length (mm)
15,6	12,7	1500	3000
19,6	16,7	2000	4000
24,6	21,7	2500	5000
31,6	28,7	3000	6000
31,6	27,1	3000	6000
39,6	36,7	3000	6000
39,6	34,0	3000	6000
49,5	43,8	3000	6000
62,5	56,9	6000	6000



20	20	3,500
25	10	3,500
25	25	3,500
32	20	5,556
32	32	5,556
40	20	5,556
50	20	6,350
63	20	7,144

19,6	16,7	2000	4000
24,6	21,7	2500	5000
24,6	21,7	2500	5000
31,6	27,1	3000	6000
31,6	28,5	3000	6000
39,6	35,2	3000	6000
49,5	44,6	3000	6000
62,5	56,9	3000	6000

\* Nut style UF with a 5 bolt hole pattern is still available.  
Please contact factory for availability.



*12	4	1,984
16	5	3,500
20	5	3,500
25	5	3,500
25	10	3,500
32	5	3,500
32	10	5,556
40	5	3,500
40	10	7,144
50	10	7,144
63	10	7,144

11,6	9,7	1500	3000
15,6	12,7	1500	3000
19,6	16,7	2000	4000
24,6	21,7	2500	5000
24,6	21,7	2500	5000
31,6	28,7	3000	6000
31,6	27,1	3000	6000
39,6	36,7	3000	6000
39,6	34,0	3000	6000
49,5	43,8	3000	6000
62,5	56,9	6000	6000

\*without wiper

## P5/T5 Ball Screw nuts with axial play or light preload

Key to nut dimensions on fold out page 16

Nut Dimensions									
D <sub>1</sub> g6 (mm)	D <sub>4</sub> (mm)	D <sub>5</sub> (mm)	D <sub>6</sub> h13 (mm)	L ±1 (mm)	L <sub>m</sub> +1 (mm)	L <sub>1</sub> +2 (mm)	L <sub>3</sub> (mm)	L <sub>7</sub> h13 (mm)	L <sub>8</sub> h13 (mm)
28	38	5,5	48	48,5	33,0	10	5,5	10	40
36	47	6,6	58	48,5	33,0	10	5,5	10	44
40	51	6,6	62	49,0	33,0	10	6,0	10	48
50	65	9,0	80	57,0	39,0	10	6,0	12	62
50	65	9,0	80	73,0	55,0	16	6,0	12	62
63	78	9,0	93	66,0	45,0	10	7,0	14	70
63	78	9,0	93	88,5	67,5	16	7,0	14	70
75	93	11,0	110	92,0	69,0	16	7,0	16	85
90	108	11,0	125	103,5	78,5	16	7,0	18	95

Technical Specification				
No Of Turns	Dynamic Load Rating (kN)	Static Load Rating (kN)	Max Axial Play (mm)	Max Preload Torque (Nm)
3,0	9,5	10,9	0,09	0,05
3,0	11,5	15,5	0,09	0,07
3,0	13,1	20,2	0,09	0,09
4,0	19,3	36,3	0,09	0,16
3,0	26,4	39,0	0,15	0,21
5,0	26,3	59,2	0,09	0,26
4,0	64,9	109,0	0,18	0,61
4,0	66,4	134,3	0,18	0,85
5,0	93,8	229,7	0,18	1,43

Light preload limits - between zero backlash to maximum preload torque figure

36	47	6,6	58	59,0	35,0	20	14,0	10	44
40	51	6,6	62	51,0	25,0	9	16,0	10	48
40	51	6,6	62	71,0	45,5	20	15,5	10	48
56	71	9,0	86	83,0	52,0	25	19,0	12	68
56	71	9,0	86	85,5	57,5	25	14,0	12	68
63	78	9,0	93	83,0	49,5	25	19,5	14	70
75	93	11,0	110	85,0	47,0	16	22,0	16	85
95	115	13,5	135	86,0	42,0	18	24,0	20	100

3,6	11,5	17,5	0,09	0,07
5,6	22,9	41,2	0,09	0,13
3,6	13,0	22,6	0,09	0,09
5,6	47,2	83,2	0,15	0,35
3,6	20,0	39,0	0,15	0,17
5,6	52,2	103,6	0,15	0,43
5,6	78,8	188,7	0,16	0,85
5,6	103,1	270,8	0,18	1,40

Nut Dimensions							
D <sub>1</sub> h12 (mm)	D <sub>11</sub> (mm)	D <sub>12</sub> (mm)	D <sub>13</sub> ±0.1 (mm)	L ±1 (mm)	L <sub>11</sub> ±0.5 (mm)	L <sub>12</sub> ±2 (mm)	L <sub>13</sub> ±2 (mm)
25	M20x1	M6x1	n/a	34,0	10,0	5	n/a
32	M30x1,5	M6x1	4	57,5	16,5	10,5	22,0
38	M35x1,5	M6x1	4	57,5	16,5	10,5	22,0
42	M40x1,5	M6x1	4	63,5	17,0	10,5	23,0
42	M40x1,5	M6x1	4	61,0	17,0	10,0	21,0
52	M48x1,5	M6x1	5	65,5	19,0	10,5	23,0
52	M48x1,5	M6x1	5	85,0	19,0	12,0	43,0
58	M56x1,5	M8x1	5	67,5	19,0	12,0	22,5
65	M60x2,0	M8x1	6	105,5	27,0	13,0	43,0
78	M72x2,0	M8x1	6	118,0	29,0	13,0	53,0
92	M85x2,0	M8x1	6	118,0	29,0	13,0	53,0

Technical Specification				
No Of Turns	Dynamic Load Rating (kN)	Static Load Rating (kN)	Max Axial Play (mm)	Max Preload Torque (Nm)
3,0	3,5	4,0	0,07	0,03
4,0	12,1	14,5	0,09	0,06
4,0	14,8	20,7	0,09	0,07
5,0	20,4	33,7	0,09	0,10
6,0	19,9	31,8	0,09	0,14
5,0	23,3	45,5	0,09	0,18
4,0	33,8	52,0	0,15	0,25
5,0	26,3	59,2	0,09	0,25
5,0	78,6	136,2	0,18	0,75
6,0	97,8	213,2	0,18	0,95
6,0	109,7	275,6	0,18	1,60



## T7 Ball Screw shafts with lead accuracy 0,052/300mm

FK type nuts, flanged single with standard leads



FH type nuts, flanged single with high leads



ZG type nuts, cylindrical single with external threads



General Details		
Nom Dia (mm)	Nom Lead (mm)	Ball Size (mm)

16	5	3,500
20	5	3,500
25	5	3,500
32	5	3,500
32	10	5,556
40	5	3,500
40	10	7,144
50	10	7,144
63	10	7,144
80	10	7,144
80	20	12,700

Shaft Details			
Outside Dia d <sub>1</sub> (mm)	Root Dia d <sub>2</sub> (mm)	Std Shaft Length (mm)	Max Shaft Length (mm)

15,6	12,7	1500	3000
19,6	16,7	2000	4000
24,6	21,7	2500	5000
31,6	28,7	3000	6000
31,6	27,1	3000	6000
39,6	36,7	3000	6000
39,6	34,0	3000	6000
49,5	43,8	3000	6000
62,5	56,9	6000	6000
79,5	73,9	6000	6000
79,5	69,9	6000	6000

20	20	3,500
25	10	3,500
25	25	3,500
32	20	5,556
32	32	5,556
40	20	5,556
50	20	6,350
63	20	7,144

19,6	16,7	2000	4000
24,6	21,7	2500	5000
24,6	21,7	2500	5000
31,6	27,1	3000	6000
31,6	28,5	3000	6000
39,6	35,2	3000	6000
49,5	44,6	3000	6000
62,5	56,9	3000	6000

*12	4	1,984
16	5	3,500
20	5	3,500
25	5	3,500
25	10	3,500
32	5	3,500
32	10	5,556
40	5	3,500
40	10	7,144
50	10	7,144
63	10	7,144
80	10	7,144
80	20	12,700

11,6	9,7	1500	3000
15,6	12,7	1500	3000
19,6	16,7	2000	4000
24,6	21,7	2500	5000
24,6	21,7	2500	5000
31,6	28,7	3000	6000
31,6	27,1	3000	6000
39,6	36,7	3000	6000
39,6	34,0	3000	6000
49,5	43,8	3000	6000
62,5	56,9	6000	6000
79,5	73,9	6000	6000
79,5	69,9	6000	6000

\*without wiper

## T7 Ball Screw nuts with axial play only

Key to nut dimensions on fold out page 16

Nut Dimensions									
D <sub>1</sub> g6 (mm)	D <sub>4</sub> (mm)	D <sub>5</sub> (mm)	D <sub>6</sub> h13 (mm)	L ±1 (mm)	L <sub>m</sub> +1 (mm)	L <sub>1</sub> +2 (mm)	L <sub>3</sub> (mm)	L <sub>7</sub> h13 (mm)	L <sub>8</sub> h13 (mm)
28	38	5,5	48	48,5	33,0	10	5,5	10	40
36	47	6,6	58	48,5	33,0	10	5,5	10	44
40	51	6,6	62	49,0	33,0	10	6,0	10	48
50	65	9,0	80	57,0	39,0	10	6,0	12	62
50	65	9,0	80	73,0	55,0	16	6,0	12	62
63	78	9,0	93	66,0	45,0	10	7,0	14	70
63	78	9,0	93	88,5	67,5	16	7,0	14	70
75	93	11,0	110	92,0	69,0	16	7,0	16	85
90	108	11,0	125	103,5	78,5	16	7,0	18	95
105	125	13,5	145	121,0	92,0	16	9,0	20	110
125	145	13,5	165	160,5	126,5	25	9,0	25	130

Technical Specification			
No Of Turns	Dynamic Load Rating (kN)	Static Load Rating (kN)	Max Axial Play (mm)
3,0	9,5	10,9	0,09
3,0	11,5	15,5	0,09
3,0	13,1	20,2	0,09
4,0	19,3	36,3	0,09
3,0	26,4	39,0	0,15
5,0	26,3	59,2	0,09
4,0	64,9	109,0	0,18
4,0	66,4	134,3	0,18
5,0	93,8	229,7	0,18
6,0	121,9	374,9	0,18
4,0	176,4	375,0	0,25

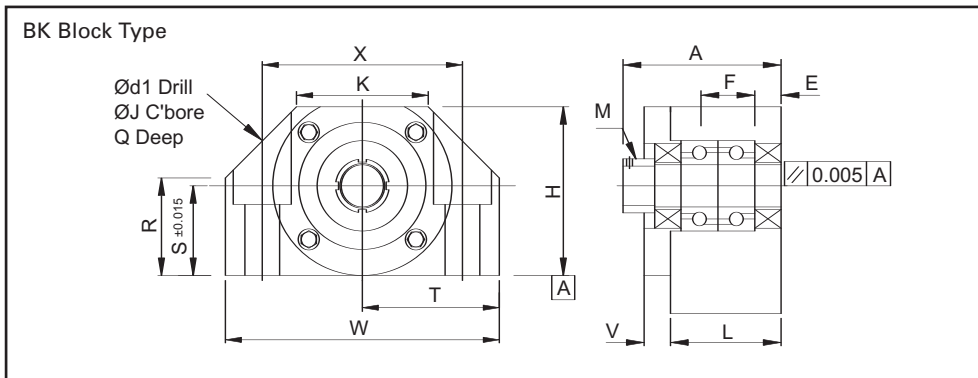
36	47	6,6	58	59,0	35,0	20	14,0	10	44
40	51	6,6	62	51,0	25,0	9	16,0	10	48
40	51	6,6	62	71,0	45,5	20	15,5	10	48
56	71	9,0	86	83,0	52,0	25	19,0	12	68
56	71	9,0	86	85,5	57,5	25	14,0	12	68
63	78	9,0	93	83,0	49,5	25	19,5	14	70
75	93	11,0	110	85,0	47,0	16	22,0	16	85
95	115	13,5	135	86,0	42,0	18	24,0	20	100

3,6	11,5	17,5	0,09
5,6	22,9	41,2	0,09
3,6	13,0	22,6	0,09
5,6	47,2	83,2	0,15
3,6	20,0	39,0	0,15
5,6	52,2	103,6	0,15
5,6	78,8	188,7	0,16
5,6	103,1	270,8	0,18

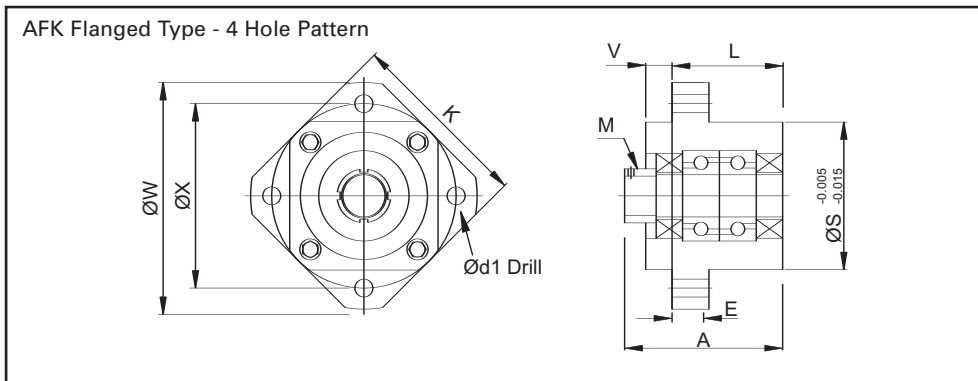
Nut Dimensions							
D <sub>1</sub> h12 (mm)	D <sub>11</sub> (mm)	D <sub>12</sub> (mm)	D <sub>13</sub> ±0.1 (mm)	L ±1 (mm)	L <sub>11</sub> ±0.5 (mm)	L <sub>12</sub> ±2 (mm)	L <sub>13</sub> ±2 (mm)
25	M20x1	M6x1	n/a	34,0	10,0	5	n/a
32	M30x1,5	M6x1	4	57,5	16,5	10,5	22,0
38	M35x1,5	M6x1	4	57,5	16,5	10,5	22,0
42	M40x1,5	M6x1	4	63,5	17,0	10,5	23,0
42	M40x1,5	M6x1	4	61,0	17,0	10,0	21,0
52	M48x1,5	M6x1	5	65,5	19,0	10,5	23,0
52	M48x1,5	M6x1	5	85,0	19,0	12,0	43,0
58	M56x1,5	M8x1	5	67,5	19,0	12,0	22,5
65	M60x2,0	M8x1	6	105,5	27,0	13,0	43,0
78	M72x2,0	M8x1	6	118,0	29,0	13,0	53,0
92	M85x2,0	M8x1	6	118,0	29,0	13,0	53,0
120	M110x2,0	M8x1	8	126,0	34,0	15,5	53,0
120	M110x2,0	M8x1	8	187,0	39,0	18,0	83,0

Technical Specification			
No Of Turns	Dynamic Load Rating (kN)	Static Load Rating (kN)	Max Axial Play (mm)
3,0	3,5	4,0	0,07
4,0	12,1	14,5	0,09
4,0	14,8	20,7	0,09
5,0	20,4	33,7	0,09
6,0	19,9	31,8	0,09
5,0	23,3	45,5	0,09
4,0	33,8	52,0	0,15
5,0	26,3	59,2	0,09
5,0	78,6	136,2	0,18
6,0	97,8	213,2	0,18
6,0	109,7	275,6	0,18
6,0	121,9	375,0	0,18
5,0	213,7	496,0	0,18

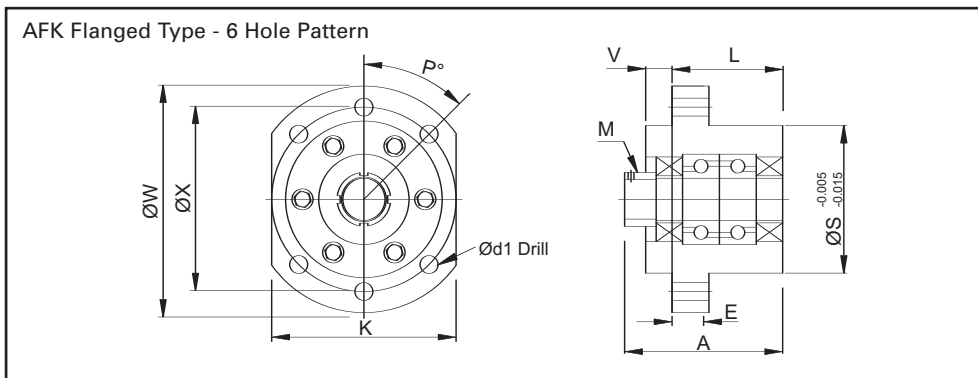
## Ball Screw Bearing Support Units - Fixed



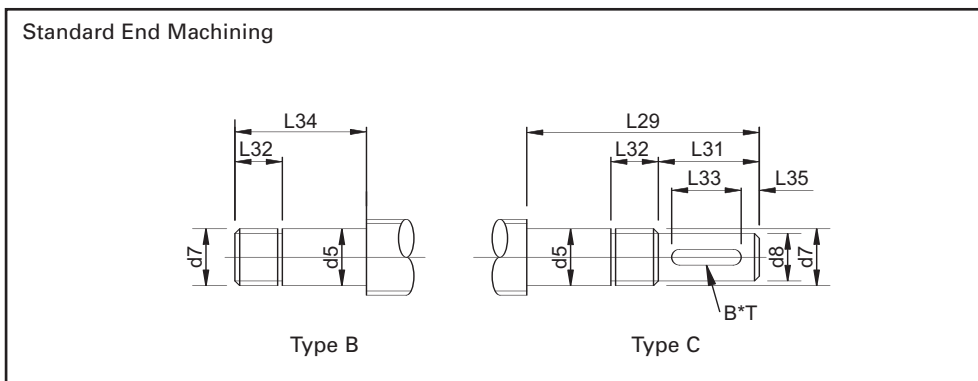
Part Number	W (mm)	H (mm)	S (mm)
BK 8	52	32	17
BK 10	60	39	22
BK 12	60	43	25
BK 15	70	48	28
BK 17	86	64	39
BK 20	88	60	34
BK 25	106	80	48
BK 30	128	89	51
BK 40	160	110	60



Part Number	W (mm)	X (mm)	S (mm)
AFK 8	43	35	28
AFK 10	52	42	34
AFK 12	54	44	36
AFK 15	63	50	40
AFK 20	85	70	57



Part Number	W (mm)	X (mm)	S (mm)
AFK 25	122	100	80
AFK 30	138	116	90
AFK 40	176	150	120



Part Number	d <sub>6</sub> (mm)	d <sub>5</sub> h6 (mm)	d <sub>7</sub> (mm)
B or C	12	8	M8x1,0
B or C	16	10	M10x1,0
B or C	16	12	M12x1,0
B or C	20	15	M15x1,0
B or C	25	17	M17x1,0
B or C	25	20	M20x1,0
B or C	32	25	M25x1,5
B or C	40	30	M30x1,5
B or C	50	40	M40x1,5

Dimensions												
R (mm)	T (mm)	X (mm)	K (mm)	d <sub>i</sub> (mm)	J (mm)	Q (mm)	M (mm)	L (mm)	A (mm)	E (mm)	F (mm)	V (mm)
18,5	26	38	25	6,6	11	6,5	M8x1,0	23	33	11,5		5
26	30	46	34	6,6	11	6,5	M10x1,0	25	38	6	13	6
30	30	46	34	6,6	11	6,5	M12x1,0	25	38	6	13	6
33	35	54	40	6,6	11	6,5	M15x1,0	27	40	6	15	7
46	43	68	50	9	14	8,5	M15x1,0	35	52	8	19	9
42	44	70	52	9	14	8,5	M20x1,0	35	52	8	19	9
59	53	85	64	11	17,5	11	M25x1,5	42	65	10	22	11
63	64	102	76	14	20	13	M30x1,5	45	74	11	23	12
80	80	130	100	18	26	17,5	M40x1,5	61	93	14	33	14

Technical Specification		
Bearing Type	Axial Load Rating (kN)	MaxPerm Load (kN)
EN8	1,64	1,48
7000A	6,70	2,78
7001A	7,25	3,10
7002A	7,75	4,07
7203A	14,00	5,95
7004A	12,95	9,70
7205A	20,60	11,70
7206B	28,60	16,60
7208B	45,00	27,70

Dimensions							
K (mm)	L (mm)	A (mm)	E (mm)	V (mm)	d <sub>i</sub> (mm)	P° (mm)	M (mm)
35	21	30	7	5	3,4	90	M8x1,0
42	25	38	7	6	4,5	90	M10x1,0
44	25	38	8	6	4,5	90	M12x1,0
52	27	40	10	7	5,5	90	M15x1,0
68	37	52	15	7	6,6	90	M20x1,0

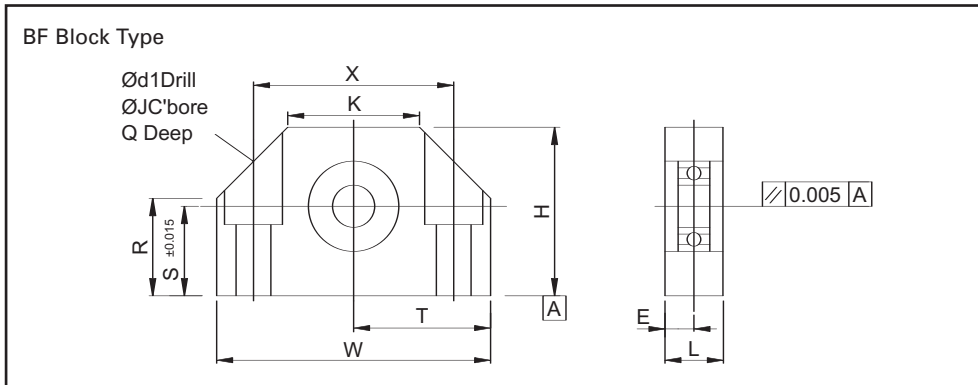
Technical Specification		
Bearing Type	Axial Load Rating (kN)	MaxPerm Load (kN)
608	1,64	3,35
7000A	6,70	2,78
7001A	7,25	3,10
7002A	7,75	4,07
7204B	18,30	9,70

Dimensions							
K (mm)	L (mm)	A (mm)	E (mm)	V (mm)	d <sub>i</sub> (mm)	P° (mm)	M (mm)
92	42	65	15	11	11	45	M25x1,5
106	45	74	16	12	11	45	M30x1,5
128	61	93	19	15	14	45	M40x1,5

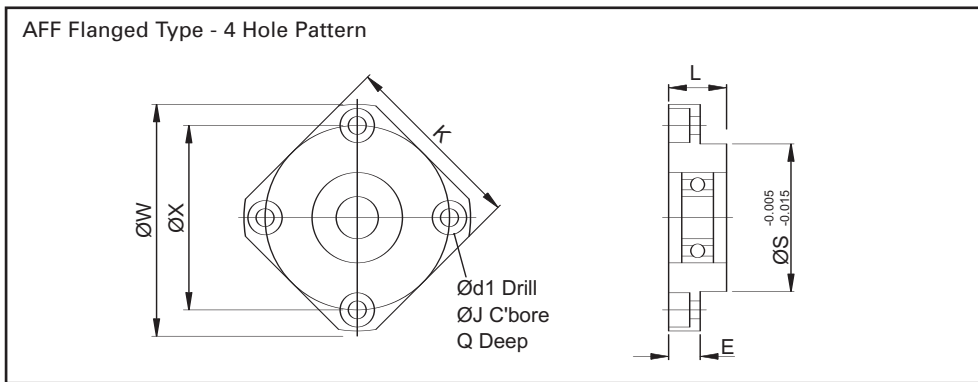
Technical Specification		
Bearing Type	Axial Load Rating (kN)	MaxPerm Load (kN)
7205B	20,60	11,70
7206B	28,60	16,60
7208B	45,00	27,70

Dimensions									
d <sub>8</sub> h7 (mm)	L <sub>29</sub> (mm)	L <sub>31</sub> (mm)	L <sub>32</sub> (mm)	L <sub>34</sub> (mm)	B P9 (mm)	T (mm)	L <sub>33</sub> (mm)	L <sub>35</sub> (mm)	Notes
6	47/45	15	8	32/30	2	2,2	10	2,5	BK/AFK
8	65	20	10	40	3	1,8	15	2,5	
10	65	25	10	40	3	1,8	18	3,5	
14	79	35	12	44	4	2,5	27	4	
15	101	40	14	56	5	3	32	4,5	Only BK
16	101	45	14	56	5	3	36	4,5	
20	122	55	17	67	6	3,5	45	5	
25	135	64	17	71	8	4	50	7	
36	167	78	21	89	10	5	63	7,5	

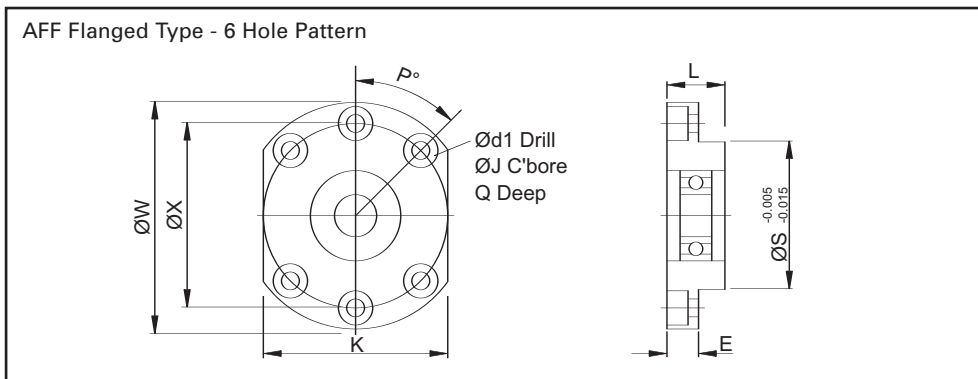
## Ball Screw Bearing Support Units - Simple Support



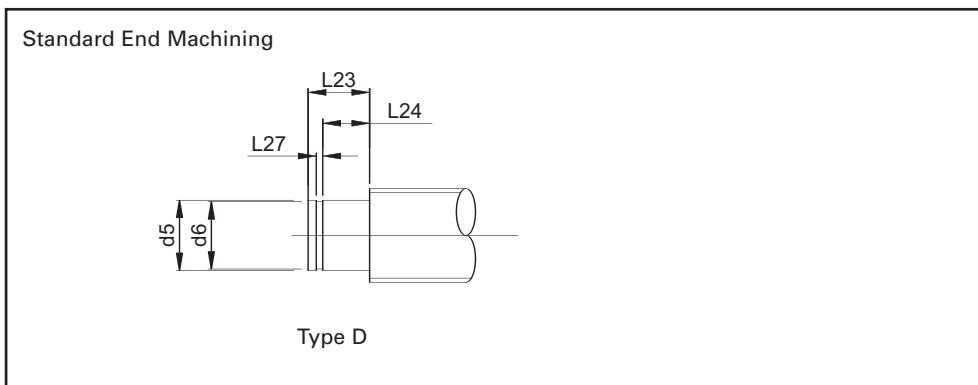
Part Number	W (mm)	H (mm)	S (mm)
BF 8	52	32	17
BF 10	60	39	22
BF 12	60	43	25
BF 15	70	48	28
BF 17	86	64	39
BF 20	88	60	34
BF 25	106	80	48
BF 30	128	89	51
BF 40	160	110	60



Part Number	W (mm)	X (mm)	S (mm)
AFF 8	43	35	28
AFF 10	52	42	34
AFF 12	54	44	36
AFF 15	63	50	40
AFF 20	85	70	57



Part Number	W (mm)	X (mm)	S (mm)
AFF 25	122	100	80
AFF 30	138	116	90
AFF 40	176	150	120



Part Number	d <sub>6</sub> (mm)	d <sub>5</sub> h6 (mm)	d <sub>6</sub> h12 (mm)
D	12	8	7,6
D	16	10	11,5
D	16	12	11,5
D	20	15	14,0
D	25	17	19,0
D	25	20	19,0
D	32	25	23,9
D	40	30	28,6
D	50	40	37,5

Dimensions									Technical Specification	
R (mm)	T (mm)	X (mm)	K (mm)	d <sub>i</sub> (mm)	J (mm)	Q (mm)	L (mm)	E (mm)	Bearing Type	Radial Load Rating (kN)
18,5	26	38	25	6,6	11	6,5	20	10	606	2,31
26	30	46	34	6,6	11	6,5	20	10	608	3,35
35	30	46	35	6,6	11	6,5	20	10	6001	4,65
38	35	54	40	6,6	11	6,5	20	10	6002	5,70
46	43	68	50	9	14	8,5	23	11,5	6203	9,75
50	44	70	52	9	14	8,5	26	13	6004	9,55
70	53	85	64	11	17,5	11	30	15	6205	14,30
78	64	102	76	14	20	13	32	16	6206	19,80
90	80	130	100	18	26	17,5	37	18,5	6208	29,70

Dimensions								Technical Specification	
K (mm)	L (mm)	E (mm)	N (mm)	d <sub>i</sub> (mm)	J (mm)	Q (mm)	P° (mm)	Bearing Type	Axial Load Rating (kN)
35	11	6	4	3,4	6,5	4	90	606	2,31
42	12	7	4	4,5	8	5	90	608	3,35
44	15	8	4	4,5	8	5	90	6001	4,65
52	17	9	4	5,5	9,5	6	90	6002	5,70
68	20	14	4	6,6	11	10	90	6204	13,00

Dimensions								Technical Specification	
K (mm)	L (mm)	E (mm)	N (mm)	d <sub>i</sub> (mm)	J (mm)	Q (mm)	P° (mm)	Bearing Type	Axial Load Rating (kN)
92	30	15	6	11	17,5	11	45	6205	14,30
106	32	15	6	11	17,5	11	45	6206	19,80
128	36	18	6	14	20	13	45	6208	29,70

Dimensions		
L <sub>23</sub> (mm)	L <sub>24</sub> (mm)	L <sub>27</sub> H13 (mm)
7,5	6	0,9
9	7	1,1
10,5	8	1,1
13	9	1,1
16	12	1,3
16	12	1,3
19	15	1,3
21	16	1,6
25	18	1,85

These notes are designed to assist in the specification and selection of a ball screw for a given application.

## Parameters

The **nominal diameter** is the dimension used when specifying the size of a ball screw. The **pitch circle diameter** (PCD) of the ball screw is the distance between centrelines of two exactly opposing recirculating balls. The **shaft outside** (d1) and **thread root** (d3) diameters determine the type and size of shaft end journals. The **lead** determines the distance travelled in one revolution of the shaft. All standard ball screws are **right handed**, however left handed threads are available upon request. The **accuracy** of the thread is defined by the deviation over a 300mm travel length, this figure also determines other parameters such as the overall lead deviation. The **travel length** determines the life of the ball screw, whether it is based on the life of the nut or the life of the shaft. **Axial play or backlash** is the free axial movement between the nut and screw. **Preloading** the ball screw eliminates this free axial movement, increases system stiffness and provides repeatable positioning. The **efficiency** of a precision ball screw is typically 90%. Express ball screws are manufactured from **standard materials** and therefore are not suitable for special applications eg vacuum, food or extreme temperature environments. Special materials are available upon request. The working **temperature range** for these products is between -30°C to 100°C.

## Ball Screw Mounting

Ball screws are designed to operate with **axial loads** only, off-centre and radial loads will significantly reduce rated life and cause premature failure of the ball screw. The **plane** of operation will determine the magnitude of the loads being applied to the ball screw. Generally the shaft is the **driven** element, however in some cases, the nut is driven. Due to the high efficiency of a ball screw system, with the drive disconnected the nut may **backdrive**. The **shaft mounting configuration** is determined by the shaft diameter, unsupported length, maximum speed and maximum compressive load. A **fixed** bearing restrains the shaft both axially and radially, a **simple** bearing provides radial support only. The **critical speed** of the assembly is the point at which harmonic vibrations occur. The **buckling load** of the shaft is the point at which the shaft will fail under a compressive load.

## Load / Life

The **dynamic load rating** is the maximum constant axial load which can be applied for a life  $1 \times 10^6$  revs. The **static load** rating is the load that will cause permanent damage to the ball track while still allowing operation at a reduced speed. The **operating loads** are the forces applied during movement. The **travel rates** are the speeds at which the operating loads are being applied. The **period** is the percentage of the time at which the different loads and speeds are applied. The **utilisation** indicates the period that the ball screw operates as a percentage of the life of the machine. Ball screw **life** can be specified in terms of millions of revolutions, thousands of hours or a number of cycles.

## Assembly

Shaft ball tracks are induction **hardened** to 58-60HRC, the depth of case is dependant on lead and ball size. Shaft material can be supplied either in the hardened or **annealed** condition. Where shafts are supplied fully **machined**, shaft straightness, shaft and nut runouts etc. are derived from the **class** of the ball screw. Nuts are case **hardened** or through **hardened** to 58-60HRC and therefore are not suitable for modification. Nuts are supplied with a small amount of grease, assemblies must be **lubricated** before fitting to equipment and at regular intervals thereafter. Nuts with **axial play** can be supplied either fitted to shafts or supplied separately on sleeves, shafts and nuts are interchangeable. Nuts with **light or medium** preload must be supplied assembled to shafts as the fit up is determined by ball selection i.e they are not interchangeable. **Bearings** can be supplied either separately or fitted to finished machined shafts. Each **bearing kit** includes the necessary fixing to attach the bearing to the shaft i.e a precision ground locknut for the preloaded sets and a circlip for the radial bearings, all types include seals.

**Contact Details**

Company:

Address:

Contact:  Contact:

Tel:  Tel:

Fax:  Fax:

E-mail:  E-mail:

**Ball Screw Parameters**

Diameter:  mm Lead:  mm Lead Direction:  Right Hand  Left Hand

Accuracy:  /300mm Nut Condition:  Backlash  Preload

Travel Length:  mm Track Length:  mm Overall Length:  mm

Application:

Environment:

Lubrication:  Oil  Grease

Quantity:  pcs per year Quantity:  pcs per consignment

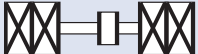
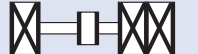
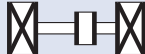

**Ball Screw Mounting**

Driven Element:  Shaft  Nut Mounting Plane:  Horizontal  Vertical  Diagonal

Maximum Speed:  rpm Maximum Load:  kN

Mounting Configuration:

Fixed-Fixed  Simple-Fixed  Simple-Simple  Free-Fixed

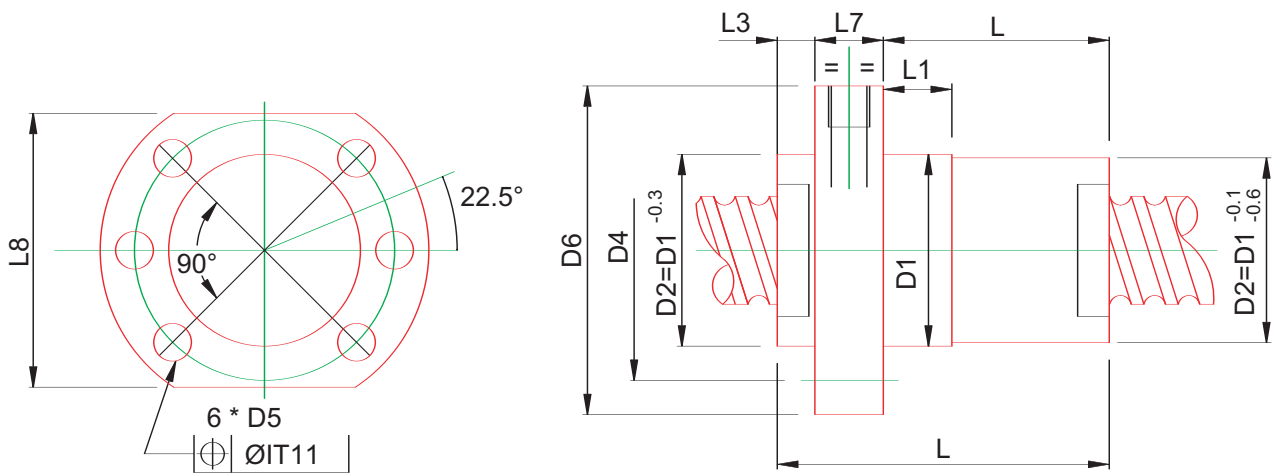
**Load/Life Data**

Utilisation: <input type="text"/> %		Load (N)	Speed (N)	Period (N)
Required Life: <input type="text"/> x10 <sup>6</sup> revs	F <sub>1</sub>	<input type="text"/>	<input type="text"/>	<input type="text"/>
Required Life: <input type="text"/> hrs	F <sub>2</sub>	<input type="text"/>	<input type="text"/>	<input type="text"/>
Minimum Dynamic Load: <input type="text"/> kN	F <sub>3</sub>	<input type="text"/>	<input type="text"/>	<input type="text"/>

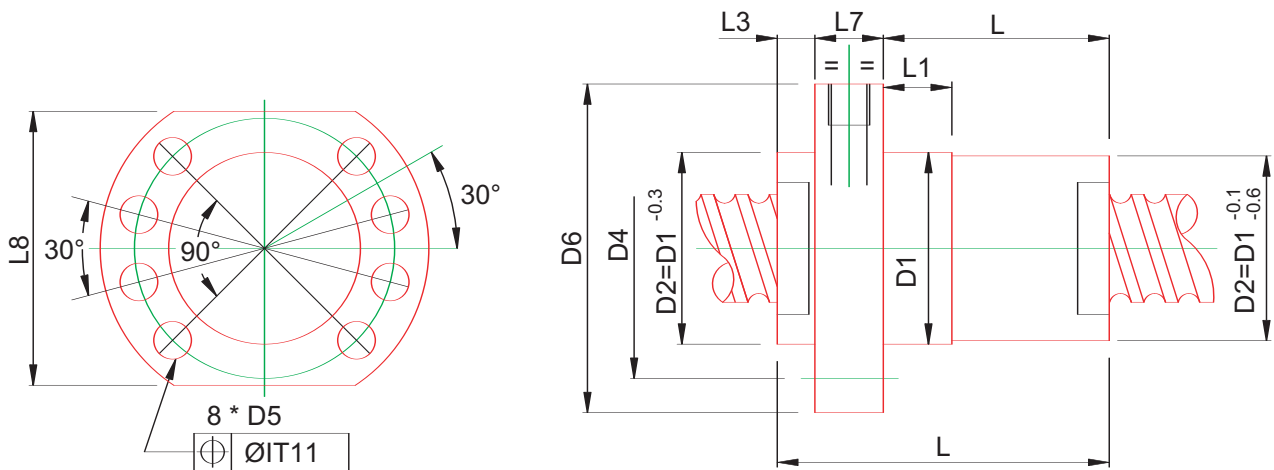
**Assembly Options**

- Cut to length shafts with nuts fitted
- Cut to length shafts with nuts supplied separately
- Shafts with annealed ends with nuts fitted
- Shafts with annealed ends with nuts supplied separately
- Fully machined shafts with nuts fitted
- Fully machined shafts with nuts and support bearings fitted

**FK, FH and FL types with diameters up to 40mm i.e. with 6 hole pattern and M6x1 lubrication point**



**FK, FH and FL types with diameters 40mm and above i.e. with 8 hole pattern and M8x1 lubrication point**



**ZG type**

