



THOMSON™

Standard Ballscrews

 **DANAHER**
MOTION

Helping you build a better machine, faster.

| | |
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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 ₁ (mm) | Root Dia d ₃ (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 ₁ g6 (mm) | D ₄ (mm) | D ₅ (mm) | D ₆ h13 (mm) | L ±1 (mm) | L _m +1 (mm) | L ₁ +2 (mm) | L ₃ (mm) | L ₇ h13 (mm) | L ₈ 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 ₁ h12 (mm) | D ₁₁ (mm) | D ₁₂ (mm) | D ₁₃ ±0.1 (mm) | L ±1 (mm) | L ₁₁ ±0.5 (mm) | L ₁₂ ±2 (mm) | L ₁₃ ±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 ₁ (mm) | Root Dia d ₃ (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 ₁ g6 (mm) | D ₄ (mm) | D ₅ (mm) | D ₆ h13 (mm) | L ±1 (mm) | L _m +1 (mm) | L ₁ +2 (mm) | L ₃ (mm) | L ₇ h13 (mm) | L ₈ 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 ₁ h12 (mm) | D ₁₁ (mm) | D ₁₂ (mm) | D ₁₃ ±0.1 (mm) | L ±1 (mm) | L ₁₁ ±0.5 (mm) | L ₁₂ ±2 (mm) | L ₁₃ ±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 ₁ (mm) | Root Dia d ₂ (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 ₁ g6 (mm) | D ₄ (mm) | D ₅ (mm) | D ₆ h13 (mm) | L ±1 (mm) | L _m +1 (mm) | L ₁ +2 (mm) | L ₃ (mm) | L ₇ h13 (mm) | L ₈ 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 |

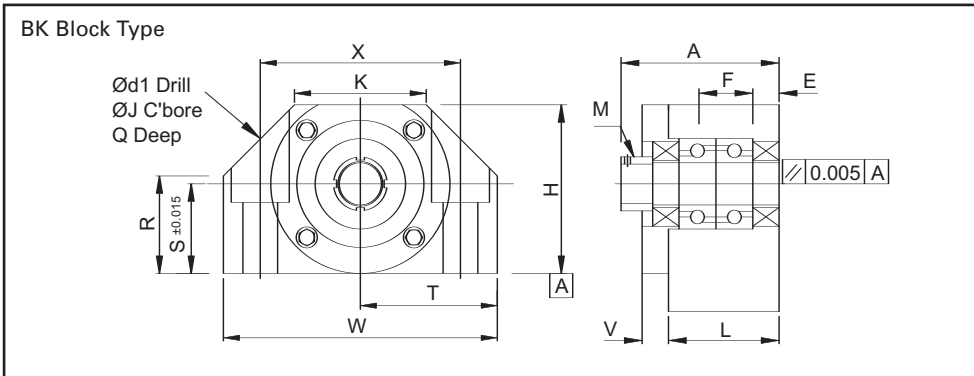
| | | | | | | | | | |
|----|-----|------|-----|------|------|----|------|----|-----|
| 36 | 47 | 6,6 | 58 | 59,0 | 35,0 | 20 | 14,0 | 10 | 44 |
| 40 | 51 | 6,6 | 62 | 51,0 | 25,0 | 9 | 16,0 | 10 | 48 |
| 40 | 51 | 6,6 | 62 | 71,0 | 45,5 | 20 | 15,5 | 10 | 48 |
| 56 | 71 | 9,0 | 86 | 83,0 | 52,0 | 25 | 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 |

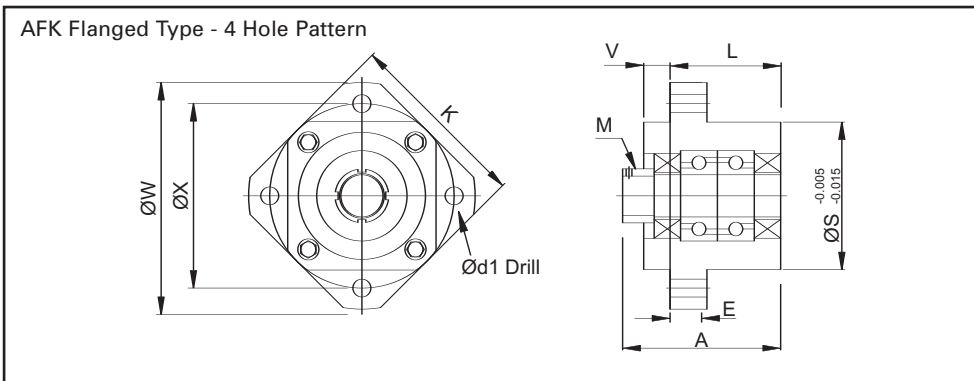
| Nut Dimensions | | | | | | | |
|-------------------------------|-------------------------|-------------------------|---------------------------------|-----------------|---------------------------------|-------------------------------|-------------------------------|
| D ₁ h12 (mm) | D ₁₁ (mm) | D ₁₂ (mm) | D ₁₃ ±0.1 (mm) | L ±1 (mm) | L ₁₁ ±0.5 (mm) | L ₁₂ ±2 (mm) | L ₁₃ ±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 |

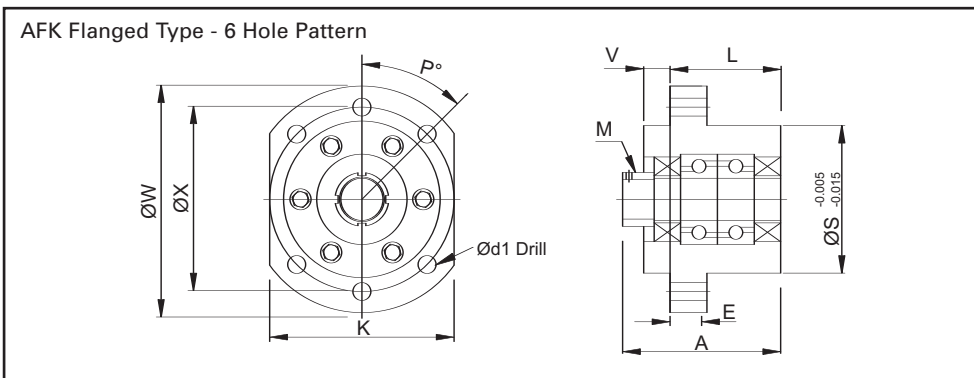
Ball Screw Bearing Support Units - Fixed



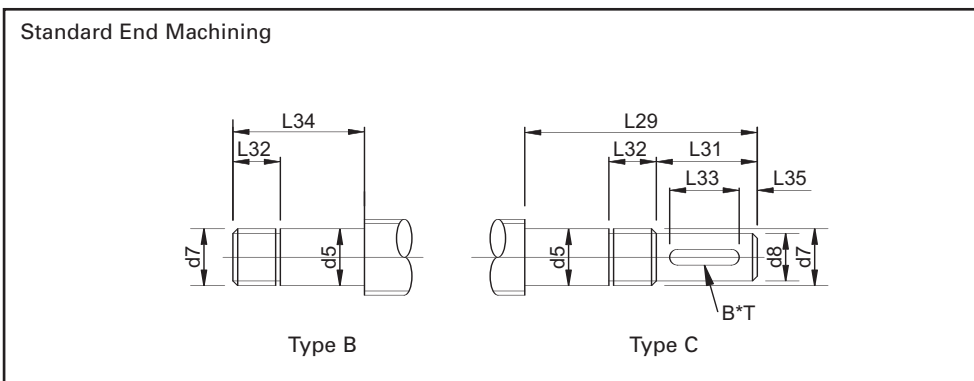
| Part Number | W (mm) | H (mm) | S (mm) |
|-------------|--------|--------|--------|
| BK 8 | 52 | 32 | 17 |
| BK 10 | 60 | 39 | 22 |
| BK 12 | 60 | 43 | 25 |
| BK 15 | 70 | 48 | 28 |
| BK 17 | 86 | 64 | 39 |
| BK 20 | 88 | 60 | 34 |
| BK 25 | 106 | 80 | 48 |
| BK 30 | 128 | 89 | 51 |
| BK 40 | 160 | 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 ₆ (mm) | d ₅ h6 (mm) | d ₇ (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 _i (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 _i (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 |

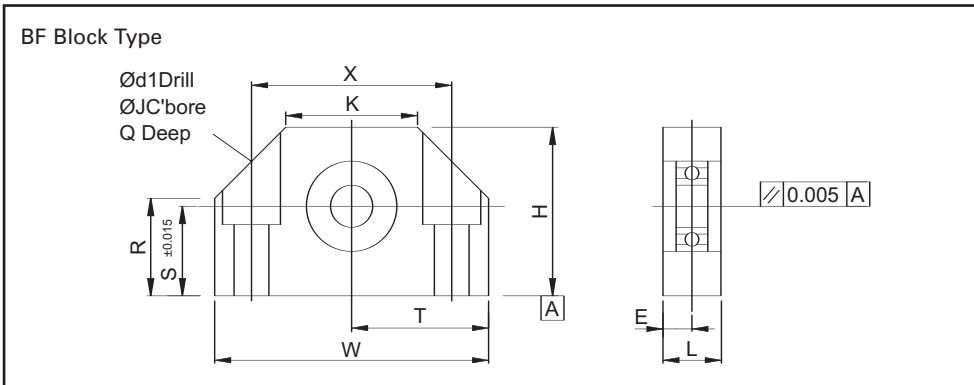
| Technical Specification | | |
|-------------------------|------------------------|-------------------|
| Bearing Type | Axial Load Rating (kN) | MaxPerm Load (kN) |
| 608 | 1,64 | 3,35 |
| 7000A | 6,70 | 2,78 |
| 7001A | 7,25 | 3,10 |
| 7002A | 7,75 | 4,07 |
| 7204B | 18,30 | 9,70 |

| Dimensions | | | | | | | |
|------------|--------|--------|--------|--------|---------------------|---------|---------|
| K (mm) | L (mm) | A (mm) | E (mm) | V (mm) | d _i (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 |

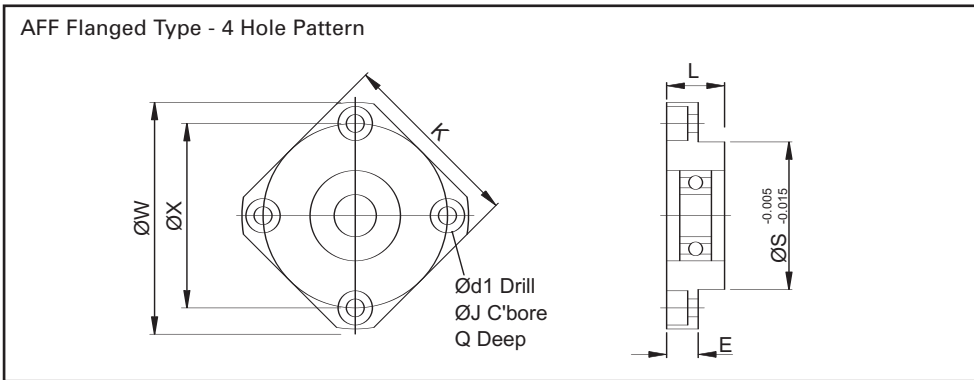
| Technical Specification | | |
|-------------------------|------------------------|-------------------|
| Bearing Type | Axial Load Rating (kN) | MaxPerm Load (kN) |
| 7205B | 20,60 | 11,70 |
| 7206B | 28,60 | 16,60 |
| 7208B | 45,00 | 27,70 |

| Dimensions | | | | | | | | | |
|------------------------|----------------------|----------------------|----------------------|----------------------|-----------|--------|----------------------|----------------------|---------|
| d ₈ h7 (mm) | L ₂₉ (mm) | L ₃₁ (mm) | L ₃₂ (mm) | L ₃₄ (mm) | B P9 (mm) | T (mm) | L ₃₃ (mm) | L ₃₅ (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 | |

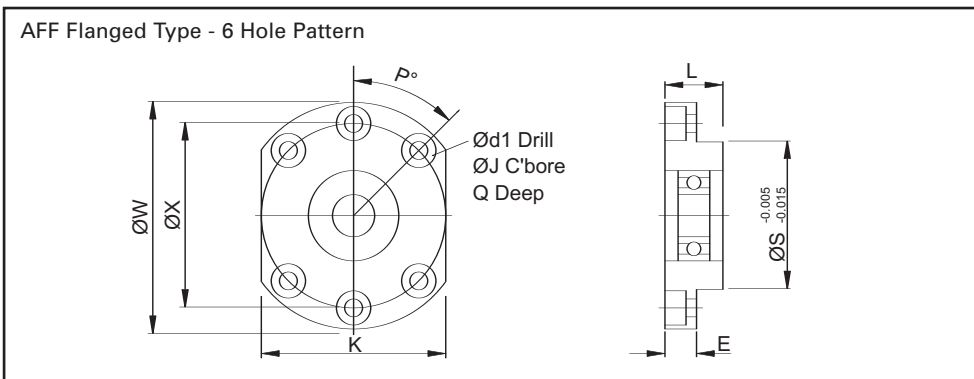
Ball Screw Bearing Support Units - Simple Support



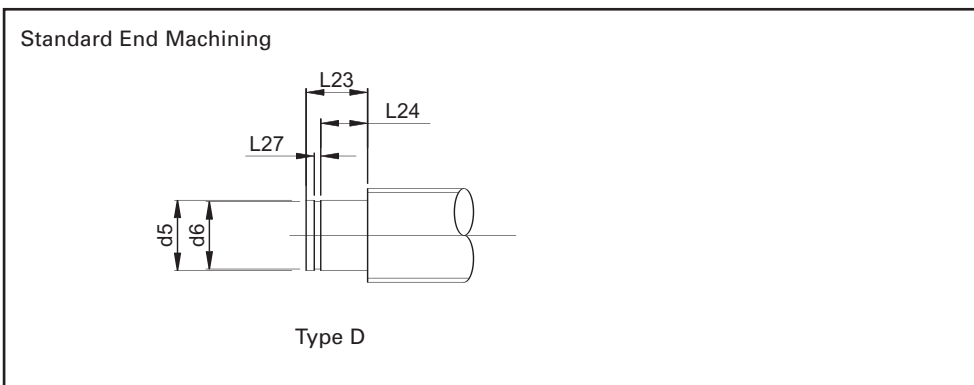
| Part Number | W (mm) | H (mm) | S (mm) |
|-------------|--------|--------|--------|
| BF 8 | 52 | 32 | 17 |
| BF 10 | 60 | 39 | 22 |
| BF 12 | 60 | 43 | 25 |
| BF 15 | 70 | 48 | 28 |
| BF 17 | 86 | 64 | 39 |
| BF 20 | 88 | 60 | 34 |
| BF 25 | 106 | 80 | 48 |
| BF 30 | 128 | 89 | 51 |
| BF 40 | 160 | 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_0 (mm) | d_5 h6 (mm) | d_6 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 _i (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 _i (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 _i (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 ₂₃ (mm) | L ₂₄ (mm) | L ₂₇ 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 1×10^6 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

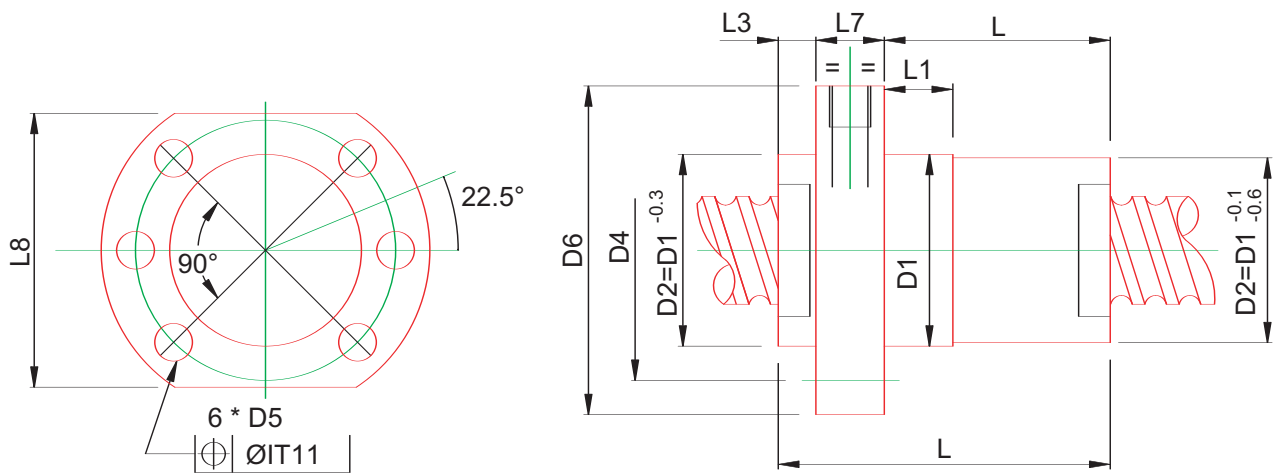
Load/Life Data

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

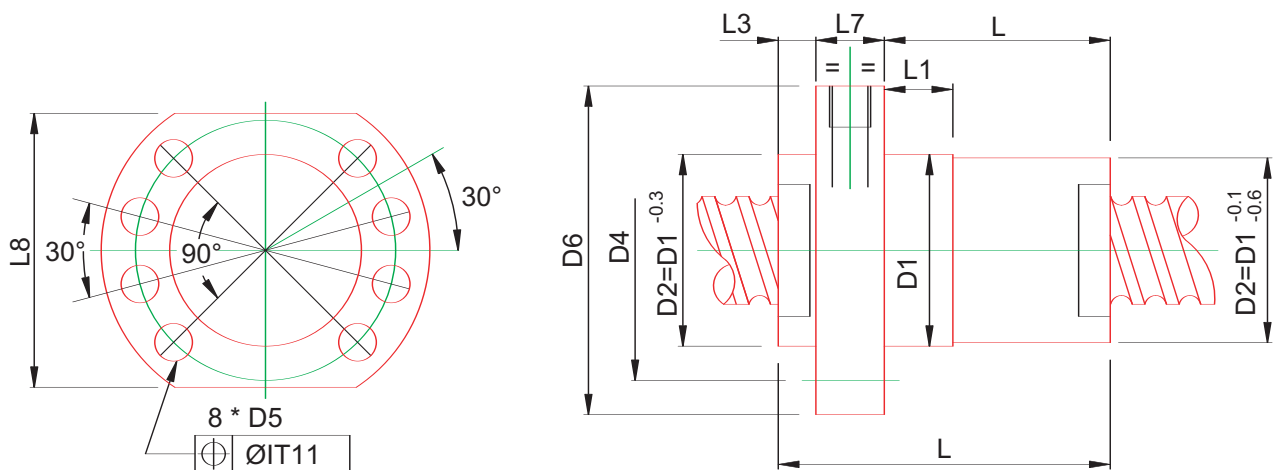
Assembly Options

- 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

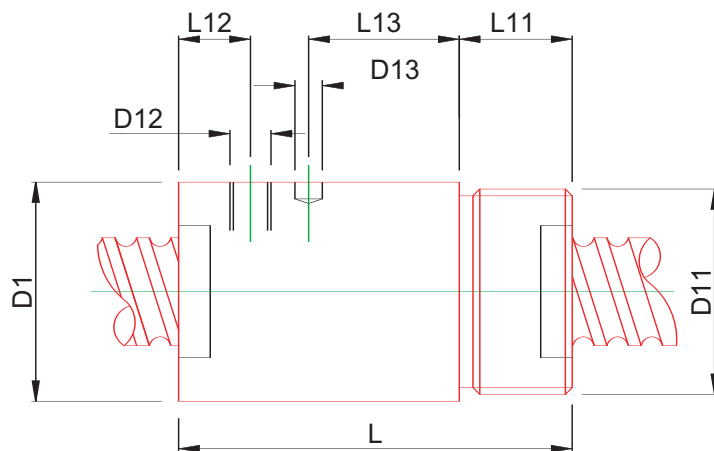
FK, FH and FL types with diameters up to 40mm i.e. with 6 hole pattern and M6x1 lubrication point



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



ZG type



Danaher Motion is the world's leading manufacturer of ball and lead screws. Our products are widely used in the most exacting applications in some of the world's most demanding industries, including high performance machine tools, industrial machinery, medical equipment and aerospace and defence.

Our product capabilities range from miniature custom lead screws for highly sensitive medical equipment to ball screws with the highest speed and stiffness capability for the world's highest performance machine tools. We specialise in providing our customers with the exact product for their application needs, whatever the demands in terms of load, speed, stiffness, precision, life and durability.

Danaher Motion has a long history of manufacturing quality ball screws and lead screws. Our roots are planted in three separate companies that held strong and definitive footholds in the market. Those companies – Thomson Industries, Warner Electric GmbH and Ball Screws & Actuators Co., Inc (BSA) – now form the nucleus of Danaher Motion's ball screw and lead screw business.

Thomson Industries was a leading U.S. producer of linear motion and control products, including linear actuators, ball screws, linear bearings, rails and precision gearboxes. Its products were found in a range of precision motion applications in the medical, industrial, aerospace and mobile off-highway markets. In October 2002, Danaher Motion acquired Thomson Industries and retained the strong Thomson brand name.

Warner Electric GmbH was founded in 1961 and started manufacturing ball screws in 1967 in Wolfschlugen, Germany. This plant specialises in the production of custom high precision, high performance ball screws for machine tool and high performance machinery manufacturers. The facility is DIN EN ISO 9001 certified and is also approved by the German Federal Aviation Board to manufacture and refurbish aviation equipment.

Founded in 1971, the Ball Screws & Actuators Co. was pioneer and leader in precision plastic nut, lead screw and ball screw technologies for linear motion applications. Their custom and off-the-shelf solutions featured many patented products, including their ActiveCAM technology for eliminating backlash while increasing performance and wear life. BSA joined Danaher Motion in 1996 and brought a wealth of experience and knowledge to the ball and lead screw team.

The current ball screw and lead screw offerings of Danaher Motion combine the quality, strength and expertise of the distinct products and professionals at these three companies under the Thomson brand. The products set the solid foundation for the broad range of standard and custom ball and lead screws currently available. If past history and experience is an indication of what the future holds, Danaher Motion is significantly poised to remain a prominent leader and pioneer in the ball screw and lead screw industry.

Thomson Industries
Thomson IBL Company
Warner Electric GmbH
Ball Screws and Actuators (BSA)




This catalogue features the most commonly used standard products from our range, if you do not find the ball screw that you need here, please contact our customer service or technical support teams.

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