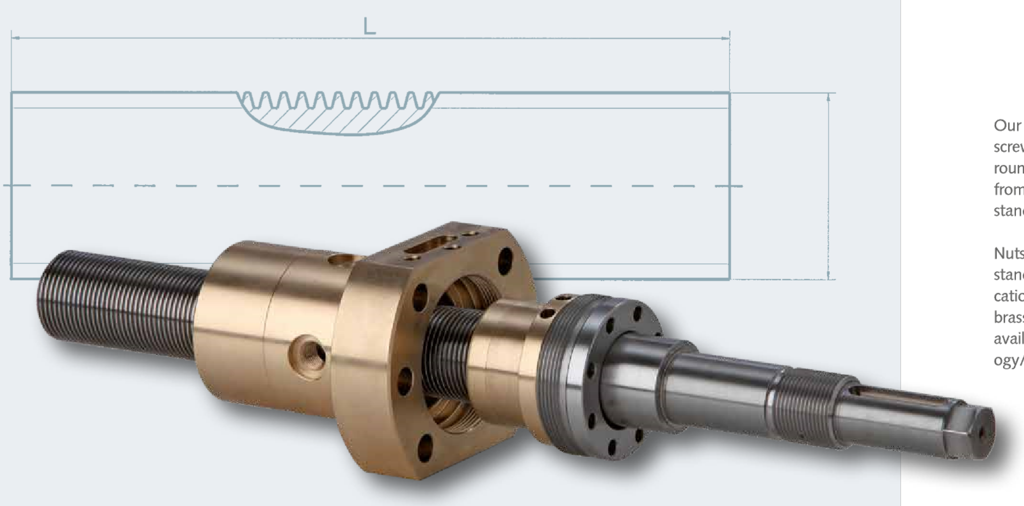
TRAPEZOIDAL / SLIDING SCREWS



Our sliding screws product group includes classic trapezoidal screws and also metric threads, saw-tooth threads, ACME and round threads. We produce all of these with diameters ranging from 6 to 160 mm. Screw lengths up to 6 m are available as standard and screws up to 12 m can be produced on request.

Nuts are available in flange or round versions as our in-house standard or we can produce them according to your specifications. Sliding screw nuts are usually made of bronze or red brass, other materials, such as steel, plastic and cast iron are also available. Our in-house standard is explained in the "Technology/calculations" section. Stainless versions are also possible.

APPLICATIONS

Trapezoidal/sliding screw applications

Our sliding screws are used in numerous sectors. We supply the market leaders in a range of industries. The majority of screws are used in lifting applications, packaging machines, linear applications and medical technology systems.

Here are a few examples:

Linear drive

Printing and colour adjustment

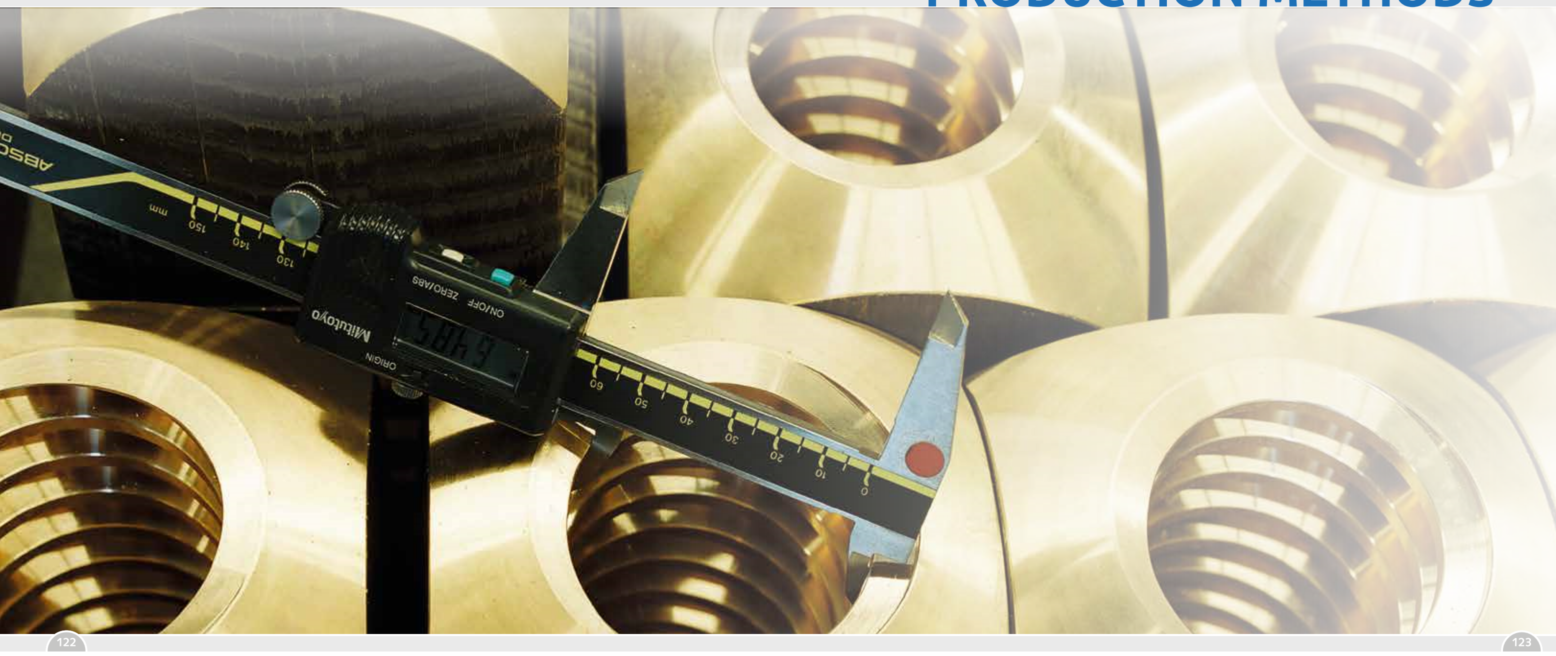
Computed tomography

Lifting jack

We offer all production methods for manufacturing motion threads. This means we can offer whirled, rolled and ground screws and hobbing or thread chasing is still in use too.

The nut thread is normally turned. In this way, the axial play between the screw and nut can be adjusted.

PRODUCTION METHODS



Thread whirling

Screws that are required in small numbers are produced by whirling. This is a machining process in which a rotary tool rotates around the bar stock. As it turns, the rotary tool is pushed out of the axis centre, thereby cutting a chip out of the raw material. If the rotary tool is then provided with an axial feed, a thread is created.

Advantages of the whirling method:

- The same tools can be used for different diameters, profiles and leads.
- Low tooling costs
- Cost effective for small batch sizes
- Hard machining of inductively hardened material is possible
- Hard-to-machine materials can be processed

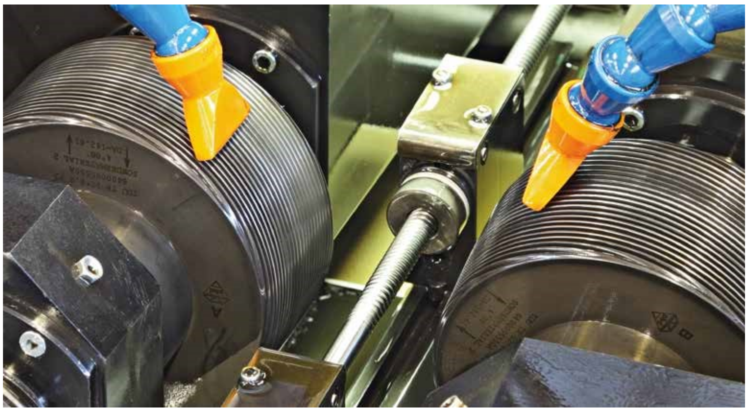
Thread rolling

Thread rolling is a cost-effective production method for larger quantities or for standard threads. However, this method is often not economically viable for small quantities, because of the relatively high tooling costs. Based on chipless cold forming, it has a positive effect on the raw material's properties. In contrast to machining methods, such as thread whirling, cutting, milling and grinding, the material's natural grain orientation is not destroyed.

Thread rolling has a positive influence on the following physical and technical properties:

- Higher wear resistance, tensile strength and bending strength
- Higher surface quality of the burnished thread flanks
- Lower corrosion
- High profile accuracy of thread depending on the rolling tool quality
- High accuracy of flank diameter (parallelism) through high base material tolerance

Plastic nuts are particularly well suited for rolled threads. The high flank surface quality of rolled threads and the low coefficient of friction of plastics result in a higher efficiency for the finished screw drive. Note that, according to DIN 103, the core diameter of rolled trapezoidal screws can be up to 0.15 x P smaller than that of machined trapezoidal screws (required flow radius on thread rolling tool). Rolled threads can contain a "closing fold" (groove) on the outer diameter of the thread. However, this does not affect the quality or function of the screw.



Thread grinding

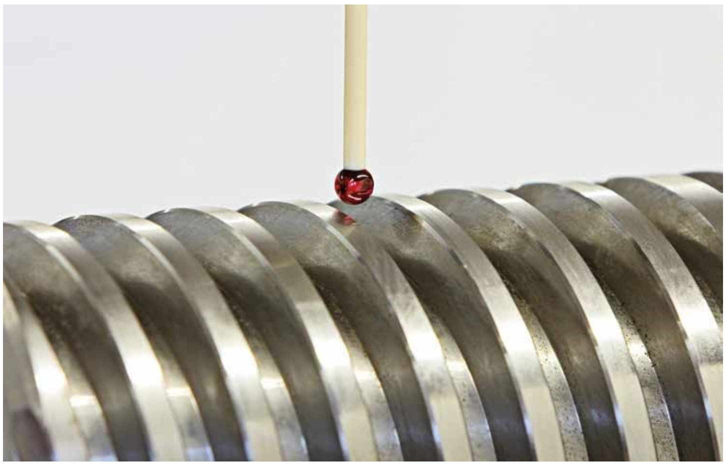
Thread grinding is a chip-forming method that uses geometrically undefined cutting. Due to the long processing times, however, this method is expensive and is only used at Kammerer for the following specifications:

- Multi-start threads
- Screws with a thread length over 4.8 m
- Custom thread profiles
- Screws with greater precision requirements
- Manufacturing screws for hydrostatic screw drives

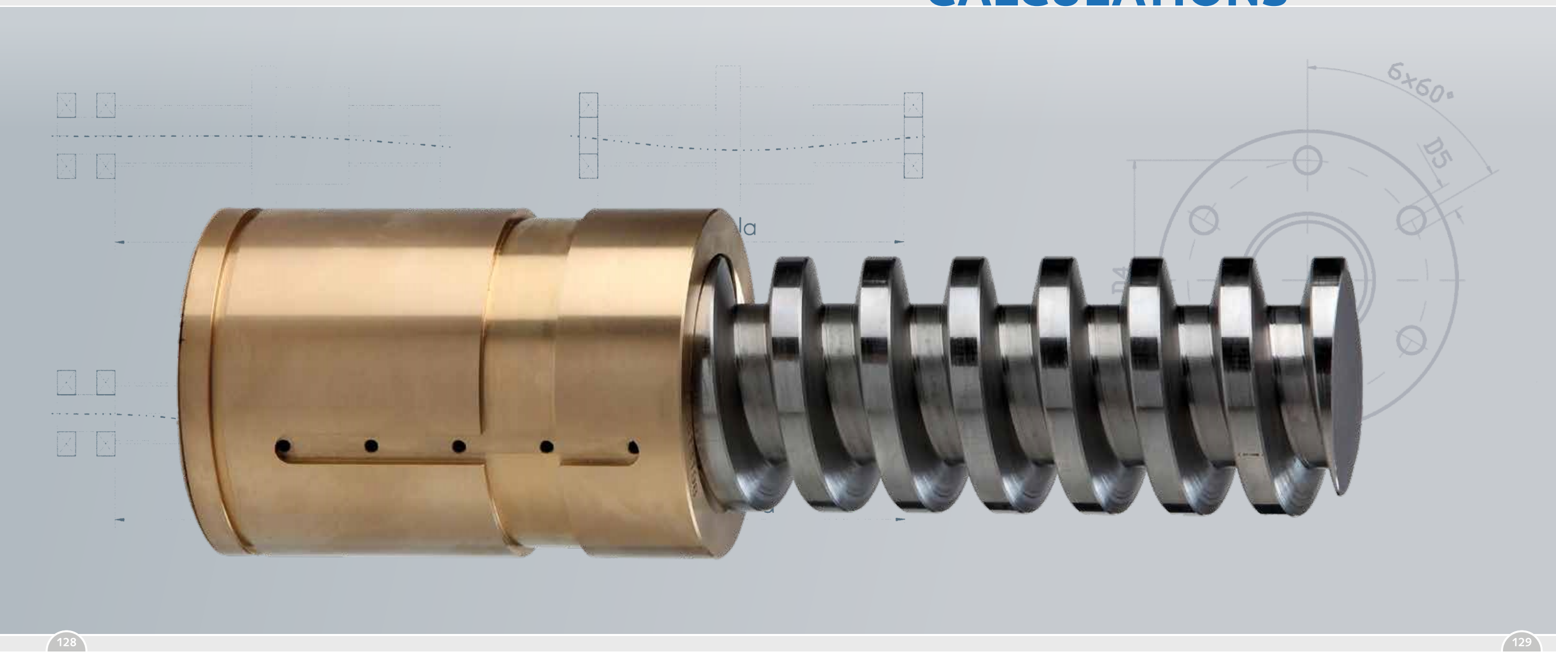
Thread milling

A variety of tools are used for thread milling: end milling, side milling and also hob cutters can all be used to machine a thread.

Milling is used for large thread profiles with a high lead angle and for multi-start threads and custom profiles. The thread dimension is always dependent on the milling tool.

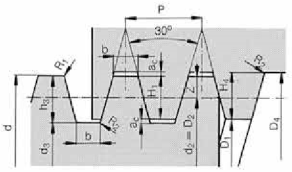


TECHNOLOGY / CALCULATIONS



Technical data

Metric ISO trapezoidal thread to DIN 103

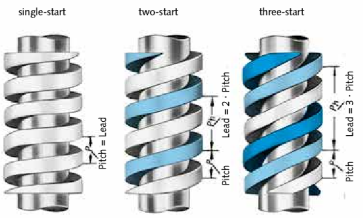


Dim.	for lead P in mm			
	1	2…5	6…12	14…44
a_c	0,15	0,25	0,5	1
R_1	0,075	0,125	0,25	0,5
R_2	0,15	0,25	0,5	1

Nominal- Ø . . . . d
Lead for single start threads and
Pitch for multi-start threads . . . . P
Lead for multi-start threads . . . . P_h
Number of starts. . . . . $n = P_h : P$
Core Ø of bolt thread . . . . $d_3 = d - (P+2 \cdot a_c)$
Outside Ø of nut thread . . . . $D_4 = d + 2 \cdot a_c$
Core Ø of nut thread . . . . $D_1 = d - P$
Thread flank Ø . . . . $d_2 = D_2 = d - 0{,}5 \cdot P$
Depth of bolt
and nut threads. . . . . $h_3 = H_4 = 0{,}5 \cdot P + a_c$
Flank overlap . . . . $H_1 = 0{,}5 \cdot P$
Height of tooth tip . . . . $z = 0{,}25 \cdot P$
Tip clearance . . . . a_c
Rounding . . . . R_1 und R_2
Three chisel width. . . . . $b = 0{,}366 \cdot P - 0{,}54 \cdot a_c$
Flank angle . . . . $\alpha = 30°$

Thread designation	Thread dimensions in mm				
	Flank-ø	Core-ø		Outside-ø	Thread-depth
	$d_2 = D_2$	Bolt d_3	Nut D_1	D_4	$h_3 = H_4$
d x P					
Tr 8×1,5	7,25	6,2	6,5	8,3	0,9
Tr 9×2	8	6,5	7	9,5	1,25
Tr 10×2	9	7,5	8	10,5	1,25
Tr 12×3	10,5	8,5	9	12,5	1,75
Tr 14×3	12,5	10,5	11	14,5	1,75
Tr 16×4	14	11,5	12	16,5	2,25
Tr 18×4	16	13,5	14	18,5	2,25
Tr 20×4	18	15,5	16	20,5	2,25
Tr 22×5	19,5	16,5	17	22,5	2,75
Tr 24×5	21,5	18,5	19	24,5	2,75
Tr 28×5	25,5	22,5	23	28,5	2,75
Tr 30×6	27	23	24	31	3,5
Tr 32×6	29	25	26	33	3,5
Tr 36×6	33	29	30	37	3,5
Tr 40×7	36,5	32	33	41	4
Tr 44×7	40,5	36	37	45	4
Tr 48×8	44	39	40	49	4,5
Tr 52×8	48	43	44	53	4,5
Tr 60×9	55,5	50	51	61	5
Tr 70×10	65	59	60	71	5,5
Tr 80×10	75	69	70	81	5,5
Tr 90×12	84	77	78	91	6,5
Tr 100×12	94	87	88	101	6,5
Tr 120×14	113	104	106	122	8
Tr 140×14	132,5	124	126	142	8
Tr 160×16	151,5	142	144	162	9

Single and multi-start threads



P_h Lead: Distance along the line of the flank diameter be tween adjacent flanks of the same orientation of the same thread.

P Pitch: Distance along the line of the flank diameter be tween adjacent flanks of the same orientation.

Multi-start (n-start) threads have the same profile as single-start threads where the lead P_h = the pitch P.

Only the permissible values for the lead P (equal to the pitch P) of the single-start thread may be selected for the pitch P of the multi-start thread. A multiple of the pitch P of the multi-start thread does not however have to correspond to a permissible lead value for a single-start thread.

Thread diameters and leads

Nominal thread diameter			Leads P of the single-start trapezoidal screw																					
Series 1	Series 2	Series 3	44	40	36	32	28	24	22	20	18	16	14	12	10	9	8	7	6	5	4	3	2	1,5
8																								1,5
	9																						2	1,5
10																							2	1,5
	11																					3	2	
12																						3	2	
	14																					3	2	
16																					4		2	
	18																				4		2	
20																					4		2	
	22																8			5		3		
24																	8			5		3		
	26																8			5		3		
28																	8			5		3		
	30														10				6			3		
32															10				6			3		
	34														10				6			3		
36															10				6			3		
	38														10			7				3		
40															10			7				3		
	42														10			7				3		
44														12				7				3		
	46													12			8					3		
48														12			8					3		
	50													12			8					3		
52														12			8					3		
	55												14			9						3		
60													14			9						3		
	65											16			10						4			
70												16			10						4			
	75											16			10						4			
80												16			10						4			
	85										18			12							4			
90											18			12							4			
	95										18			12							4			
100										20				12							4			
		105								20				12							4			
	110									20				12							4			
		115							22				14											
120									22				14											
		125							22				14											
	130								22				14											
		135						24					14											
140								24					14											
		145						24					14											
	150							24				16												
		155						24				16												
160							28					16												
		165					28					16												

Dimensions in mm

A pre-selection of the trapezoidal screw dimensions can be found in the table above.

Priority should be given to the series 1 diameters. Then the matching lead according to DIN 103 can be selected. We can also produce custom leads to suit your needs.

Calculations

Carrying capacity:
The ratings of trapezoidal screws are influenced by many factors. The most important factors are material pairings, surface quality, surface compression, duty, lubrication and temperature.
Select a screw according to your requirements (required feed speed, fitting space, etc.) and calculate the necessary length of nut for your application.

Arithmetical determination of the nut length

[01] $$L_m = \frac{F \times P}{p_{zul.} \times d_2 \times \pi \times H_1 \times z}$$

L_m = nut length required [mm]
F = xial loading force [N]
P = thread lead [mm]
$p_{zul.}$ = permissible surface compression [N/mm²]
d_2 = flank diameter [mm]
H_1 = thread bearing depth [mm] (0.5 x P)
z = number of starts

The permissible surface compression is dependent upon the sliding speed and the material used for the nut.
A value of 10 N/mm2 can be taken as a rough estimate. Approximate values for common materials can be found in the table below.

Existing surface compression depending on nut selected

[02] $$p_{vorh.} = \frac{F \times P}{L_m \times d_2 \times \pi \times H_1 \times z}$$

$p_{vorh.}$ = existing surface compression [N/mm²]
F = axial loading force [N]
P = thread lead [mm]
L_m = nut length required [mm]
d_2 = flank diameter [mm]
H_1 = thread bearing depth [mm] (0,5 x P)
z = number of starts

Sliding speed

[03] $$v_g = \frac{n \times d_2 \times \pi}{60000}$$

v_g = sliding speed [m/s]
n = rotational speed [rpm]
d_2 = flank diameter [mm]

Screw feed speed

[04] $$s = \frac{n \times P}{1000}$$

s = feed speed [m/min]
n = rotational speed [rpm]
P = lead [mm]

Material:	Sliding speed	$p_{zul.}$
	[m/s]	N/mm²
Steel	1,5	10
CuSn alloy	1,5	10
CuAl alloy	1,5	10
Plastic PA	0,6	1

Approximate values for the permissible surface compression for sliding screws. Exact particulars can be requested from the material manufacturers.

Berechnungen

Drive torque

[05] $$M_{ta} = \frac{F \times P}{2000 \times \pi \times \eta}$$

[06] $$M_{te} = \frac{F \times P \times \eta'}{2000 \times \pi}$$

M_{ta} = drive torque [Nm] when converting a rotary to a linear movement
M_{te} = drive torque [Nm] when converting a linear to a rotary movement
F = axial loading force [N]
P = thread lead [mm]
η = efficiency
η' = efficiency

Efficiency

[07] $$\eta = \frac{\tan\alpha}{\tan(\alpha + \rho)}$$

[08] $$\eta' = \frac{\tan(\alpha - \rho)}{\tan\alpha}$$

η = efficiency (torque to linear force)
η' = efficiency (linear force to torque)
α = lead angle [°]
ρ = friction angle [°]

Lead angle

[09] $$\tan\alpha = \frac{P}{d_2 \times \pi}$$

α = lead angle [°]
P = thread lead [mm]
d_2 = flank diameter [mm]

Friction angle

[10] $$\tan\rho = \mu G$$

ρ = friction angle [°]
μG = see table below

The thread is self-locking if pitch angle < friction angle

Drive power

[11] $$P_a = \frac{M_{ta} \times n}{9550}$$

P_a = drive power [kW]
M_{ta} = drive torque [Nm]
n = rotational speed [rpm]

Nut made from:	μG	
	dry	lubricated
Cast iron GG	0,18	0,1
Steel	0,15	0,1
Bronze CuSn	0,1	0,05
Plastic	0,1	0,05

Friction values for common nut materials.

These values can be affected by lubrication, roughness, loading, etc.

Calculations

Critical bending speed

[12] $$n_{kr.} = \frac{30}{\pi} \times \sqrt{\frac{21\times10^4 \times d_2^{\,4} \times 10^4}{0{,}013 \times F \times l_a^{\,3} \times 20}}$$

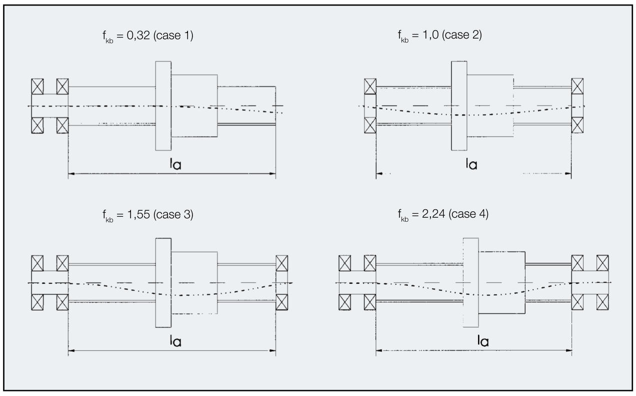
n_{kr} = critical speed due to weight and length of spindle [rpm]
d_2 = flank diameter of thread [mm]
F = weight of the unsupported spindle length [N]
l_a = distance between bearings [mm]

The critical bending speed is dependent upon the deflection of the spindle and thus upon the diameter and the distance between the bearings. The permissible speed can now be calculated from the way in which the spindle is mounted and from a safety factor.

Permissible speed

[13] $$n_{zul.} = 0.8 \times n_{kr.} \times f_{kb.}$$

$n_{zul.}$ = permissible speed [rpm]
n_{kr} = critical speed due to weight and length of spindle [rpm]
f_{kb} = correction factor for deflection
0.8 = safety factor



Correction factor f_{kb} for calculating the permissible speed

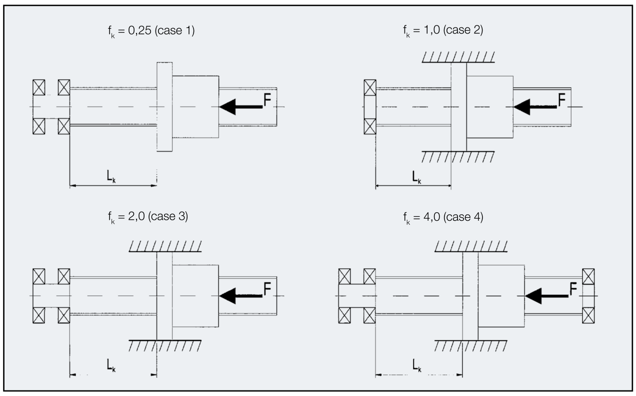
Calculations

Calculating the buckling force

[14] $$F_{Kn.} = \frac{21\times10^4 \times d_3^{\,4} \times \pi^3 \times f_k}{64 \times L_k^{\,2}}$$

F_{Kn} = buckling force for the spindle [N]
d_3 = spindle core diameter [mm]
f_k = correction factor for type of mounting
L_K = unsupported spindle length [mm]

The buckling force of the screw spindle is dependent upon the unsupported spindle length and the core diameter of the spindle.



Correction factor f_k for taking into account the type of mounting

Permissible sliding speeds (guide values):

Material	CuSn- und CuAl-alloy/steel	Cast iron	GS, GTW
Sliding speed in m/s in relation to flank diameter	Permissible surface pressure in N/mm²		
0,1	19,3	5,8	9,7
0,2	18,6	5,6	9,3
0,3	18,0	5,4	9,0
0,4	17,3	5,2	8,7
0,5	16,6	5,0	8,3
0,6	16,0	4,8	8,0
0,7	15,3	4,6	7,7
0,8	14,6	4,4	7,3
0,9	14,0	4,2	7,0
1,0	13,3	4,0	6,7
1,1	12,6	3,8	6,3
1,2	12,0	3,6	6,0
1,3	11,3	3,4	5,7
1,4	10,6	3,2	5,3
1,5	10,0	3,0	5,0
1,6	9,3	2,8	4,7
1,7	8,6	2,6	4,3
1,8	8,0	2,4	4,0
1,9	7,3	2,2	3,7
2,0	6,6	2,0	3,3
2,1	6,0	1,8	3,0
2,2	5,3	1,6	2,7
2,3	4,6	1,4	2,3
2,4	4,0	1,2	2,0
2,5	3,3	1,0	1,7
2,6	2,6	0,8	1,3
2,7	2,0	0,6	1,0
2,8	1,3	0,4	0,7
2,9	0,6	0,2	0,3

The permissible surface pressure on the thread flank depends on the sliding speed. The slower the drive runs, the more loading it can take.

As a rule of thumb: At a speed of 1.5 m/sec, the permissible surface pressure for bronze nuts is 10 N/mm²

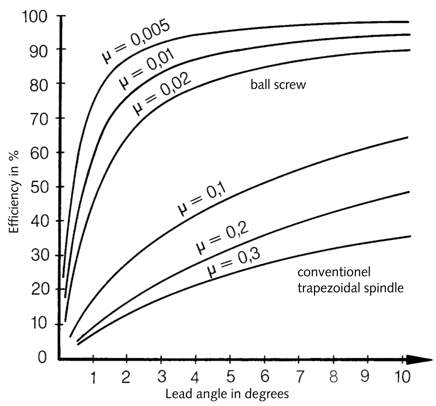
There are a wide range of lubrication options for sliding screws. These must be adapted for the application in question and tested.

We can only provide recommendations on the basis of completed projects. Therefore, we recommend that you contact the lubricant manufacturer.

Efficiency of trapezoidal spindles:

The efficiency of trapezoidal spindles is significantly less than that of ball screw spindles due to the sliding friction.

However, the trapezoidal screw is technically simpler and less expensive. A holding device (e.g. brake) is only required in rare cases due to the self-braking action of the trapezoidal screw spindle.



Graph showing the efficiency as a function of the coefficient of friction

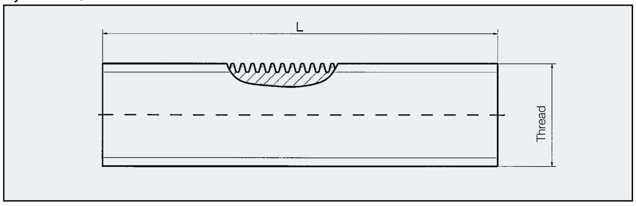
Coefficients of friction for common nut materials

Nuts made of:	μG	
	dry	lubricated
Cast iron GG	0,18	0,1
Steel	0,15	0,1
Bronze CuSn	0,1	0,05
Plastic	0,1	0,05

THREADS ACCORDING TO DIN 103

Trapezoidal screws, whirled

Sold by the meter, whirled



Advantages of whirled screws

- Low tool and set-up costs
- Suitable for single item and small series production
- Material properties only have a minor influence on the lead accuracy
- Ideal for grease lubrication due to the flank surface quality created during whirling
- Tool can be used for different leads

Our selection:

- Trapezoidal screw according to DIN 103, tolerance grade 7e and other required tolerance grades
- The standard lengths are 1 m, 1.5 m, 2 m, 3 m, 6 m
- Other lengths are available on request
- The materials below are standard at Kammerer
- Two quality classes available (see table below)
- All dimensions can also be supplied as a left-hand thread

	Quality classes	
	GK 1	GK 2
Lead variation	0,05 / 300mm	0,15 / 300mm
Straightness	0,3 / 1000mm	0,8 / 1000mm
External Ø tolerance	h9	h11

Non-alloy steels	C45 / 11SMn30
Nitriding steels	42CrMo4 + Qt / 31CrMoV9 / ETG 25 / 88 / 100
Stainless steel	VA (1.4305) V2A (1.4301 / 1.4021) V4A (1.4571 / 1.4404)
Special steels	Available on request

Further dimensions on request

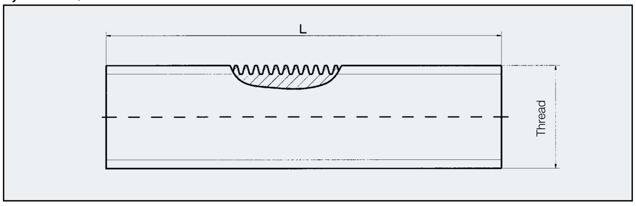
Order example:
Screw Tr70 x 10 x 2 m long, lead left, whirled GK2

Thread				
Tr 8x1,5	Tr 16x4	Tr 30x6	Tr 55x9	Tr 100x12
Tr 10x2	Tr 18x4	Tr 32x6	Tr 60x9	Tr 110x12
Tr 10x3	Tr 20x4	Tr 36x6	Tr 65x10	Tr 120x14
Tr 12x2	Tr 22x5	Tr 40x7	Tr 70x10	Tr 130x14
Tr 12x3	Tr 24x5	Tr 44x7	Tr 75x10	Tr 140x14
Tr 14x3	Tr 26x5	Tr 50x8	Tr 80x10	Tr 150x16
Tr 14x4	Tr 28x5	Tr 52x8	Tr 90x12	Tr 160x16

Quality classes according to Kammerer standard, other accuracies available on request.

Trapezoidal screws, rolled

Sold by the meter, rolled



Advantages of rolled screws:

- The grain orientation of the material is not affected
- Greater resistance to wear and higher tensile and bending strength due to cold forming
- Better surface quality on the thread flanks
- Lower tendency to corrode
- High profile accuracy
- Low coefficient of friction when used with plastic nuts

Our selection:

- Trapezoidal screw according to DIN 103, tolerance grade 7e and other required tolerance grades
- The standard lengths are 1 m, 1.5 m, 2 m, 3 m
- Other lengths are available on request
- The materials below are standard at Kammerer
- Two quality classes available (see table below)

	Quality classes	
	GK 1	GK 2
Lead variation	0,1 / 300mm	0,3 / 300mm
Straightness	0,8 / 1000mm	1,5 / 1000mm
Flaking	impermissible	permissible

Non-alloy steels	C15
Nitriding steels	42CrMo4 ETG 25
Stainless steel	VA (1.4305) V2A (1.4301 / 1.4021)

Further dimensions on request

Order example:
Screw Tr20 x 4 x 2 m long, lead right, rolled GK1

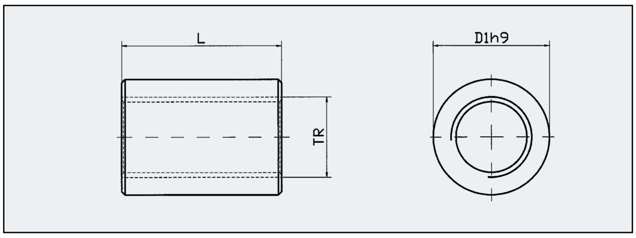
Thread	right	left
Tr 8 x 1,5	X	X
Tr 10 x 2	X	X
Tr 10 x 3	X	X
Tr 12 x 2	X	X
Tr 12 x 3	X	X
Tr 14 x 3	X	X
Tr 14 x 4	X	X
Tr 16 x 4	X	X
Tr 18 x 4	X	X
Tr 20 x 4	X	X
Tr 22 x 5	X	X
Tr 24 x 5	X	X

Thread	right	left
Tr 26 x 5	X	X
Tr 28 x 5	X	X
Tr 30 x 6	X	X
Tr 32 x 6	X	X
Tr 36 x 6	X	X
Tr 40 x 7	X	X
Tr 44 x 7	X	X
Tr 50 x 8	X	X
Tr 52 x 8	X	X
Tr 60 x 9	X	

According to DIN 103, the core diameter of rolled trapezoidal screws can be 0.15 x P smaller than that of machined trapezoidal screws (flow radius required on the thread-rolling tool). Rolled threads may have a “closing fold” (groove) on the outside diameter of the thread turn. This does not affect the quality or function of the thread. It is merely a criterion for assessing the rolling technology.

Round nuts

Round nut, short or long



- Trapezoidal thread to DIN 103, tolerance class 7H
- These nuts are provided in the adjacent materials
- Other materials and tolerances on request
- Short design: L = 1.5 x nominal diameter
- Long design: L = 2 x nominal diameter

- C15
- C45
- CuSn12
- RG7
- GGC-25
- Plastic

Ordering example:
Round nut Tr 44x7, left-hand, made from CuSn12, short, in accordance with Kammerer catalogue

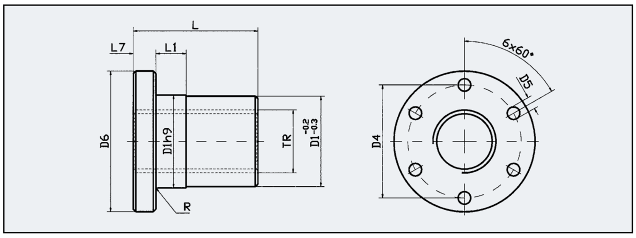
Short design		
Thread	**D1**	**L**
Tr 8 x 1,5	18	12
Tr 10 x 2	22	15
Tr 10 x 3	22	15
Tr 12 x 3	26	18
Tr 14 x 4	30	21
Tr 16 x 4	36	24
Tr 18 x 4	45	27
Tr 20 x 4	45	30
Tr 22 x 5	50	33
Tr 24 x 5	50	36
Tr 26 x 5	60	39
Tr 28 x 5	60	42
Tr 30 x 6	60	45
Tr 32 x 6	60	48
Tr 36 x 6	75	54
Tr 40 x 7	80	60
Tr 44 x 7	80	66
Tr 48 x 8	90	72
Tr 50 x 8	90	75
Tr 60 x 9	100	90
Tr 70 x 10	110	105
Tr 80 x 10	120	120
Tr 90 x 12	130	135

Long design		
Thread	**D1**	**L**
Tr 8 x 1,5	18	16
Tr 10 x 2	22	20
Tr 10 x 3	22	20
Tr 12 x 3	26	24
Tr 14 x 4	30	28
Tr 16 x 4	36	32
Tr 18 x 4	45	36
Tr 20 x 4	45	40
Tr 22 x 5	50	44
Tr 24 x 5	50	48
Tr 26 x 5	60	52
Tr 28 x 5	60	56
Tr 30 x 6	60	60
Tr 32 x 6	60	64
Tr 36 x 6	75	72
Tr 40 x 7	80	80
Tr 44 x 7	80	88
Tr 48 x 8	90	96
Tr 50 x 8	90	100
Tr 60 x 9	100	120
Tr 70 x 10	110	140
Tr 80 x 10	120	160
Tr 90 x 12	130	180

Catalogue nuts in standard dimensions are only produced upon customer request.
Not available from stock.

Flange nuts

Flanged nut, short or long



- Trapezoidal thread to DIN 103, tolerance class 7H and other requested tolerance classes
- These nuts are provided in the adjacent materials
- Other materials and tolerances on request
- Two designs (long or short), with or without fixing holes

- C15
- C45
- CuSn12
- RG7
- GGC-25
- Plastic

Ordering example:
Flanged nut Tr 20x4, right-hand, made from RG7, short, in accordance with Kammerer catalogue

Thread	D1	D4	D5	D6	L (short)	L (long)	L1	L7
Tr 8 x 1,5	22	32	4	40	12	16	4	8
Tr 10 x 2	25	34	5	42	15	20	5	10
Tr 10 x 3	25	34	5	42	15	20	5	10
Tr 12 x 3	28	38	6	48	18	24	6	12
Tr 14 x 4	28	38	6	48	21	28	9	12
Tr 16 x 4	28	38	6	48	24	32	12	12
Tr 18 x 4	28	38	6	48	27	36	15	12
Tr 20 x 4	32	45	7	55	30	40	8	12
Tr 22 x 5	32	45	7	55	33	44	8	12
Tr 24 x 5	32	45	7	55	36	48	8	12
Tr 26 x 5	38	50	7	62	39	52	8	14
Tr 28 x 5	38	50	7	62	42	56	8	14
Tr 30 x 6	38	50	7	62	45	60	8	14
Tr 32 x 6	45	58	7	70	48	64	10	16
Tr 36 x 6	45	58	7	70	54	72	10	16
Tr 40 x 7	63	78	9	95	60	80	12	16
Tr 44 x 7	63	78	9	95	66	88	12	16
Tr 48 x 8	72	90	11	110	72	96	14	18
Tr 50 x 8	72	90	11	110	75	100	14	18
Tr 60 x 9	88	110	13	130	90	120	16	20
Tr 70 x 10	88	110	13	130	105	140	16	20
Tr 80 x 10	118	140	15	163	120	160	18	22
Tr 90 x 12	118	140	15	163	135	180	18	22

Further dimensions on request
Catalogue nuts in standard dimensions are only produced upon customer request.
Not available from stock.

CUSTOM THREADS

Custom threads

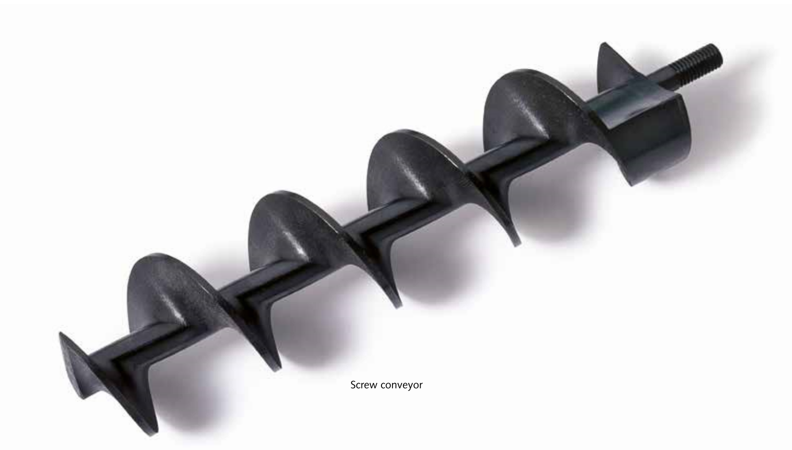
We can make tools for producing custom threads and profiles. Your specific requirements always come first: on request, we produce custom profiles with non-standard thread depth, shape and dimensions. We can usually handle custom leads too.

The custom threads are made exactly to your specifications. We produce custom threads, screws and nuts from a wide range of materials, such as steel, stainless steel, cast iron, bronze, plastic, aluminium and titanium.

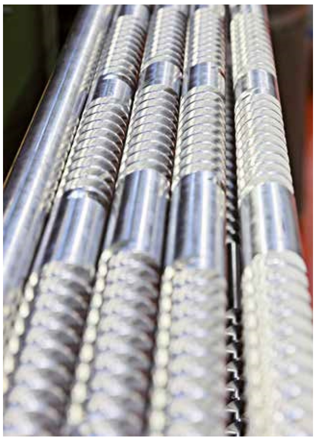
Coarse thread screw with nut

Spiral core for circulating liquid

Various custom profiles



Screw conveyor



Blanks for custom threads

We can produce the following non-standard products:

- Rolled precision worm shafts
- Screw conveyors
- Milled coarse threads (e.g. Tr 32x200)
- Round threads
- Saw-tooth threads
- Diamond threads
- ACME threads

Should you require a custom design or a thread with custom dimensions, please ask our experienced engineers.

Please feel free to use the contact form on our website **www.kammerer-gewinde.de** to get in touch.