

# SCREW DRIVES

„trapezoidal, S, ACME“



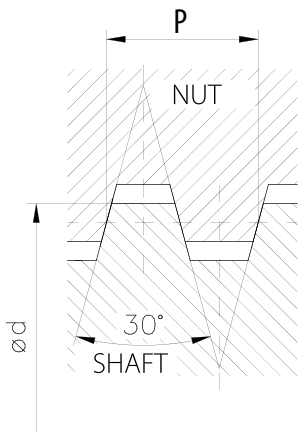
**KULIČKOVÉ ŠROUBY KUŘIM, a.s.**  
„We always have a solution!“

**KSK**  
PRECISE MOTION

## Thread profiles

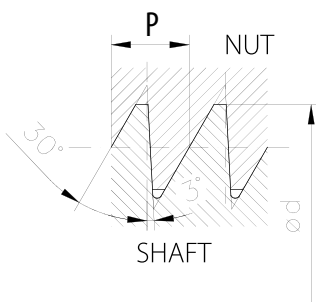
### Trapezoidal thread profile – (Tr) according to ČSN 01 4050, DIN 103 standards

- The standard trapezoidal thread is designed for self-locking transfer of rotary movement to straight movement.



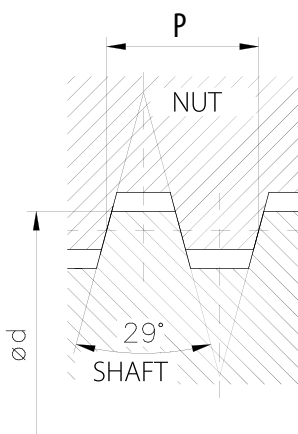
### S - thread profile – (S) according to ČSN 01 4052, DIN 513 standards

- This thread profile peak angle is  $30^\circ+3^\circ$ . We are able to produce this thread type in a reinforced variant with profile peak angle  $45^\circ+3^\circ$  (ČSN 01 4052).



### ACME thread profile – (ACME) according to B.S. 1104

- This standard thread profile is used overseas. The thread with the ACME profile is distinguished with a different profile peak angle. We are able to produce this profile type in the standard inch as well as in metric variant. An alternative is a modified ACME thread with peak angle  $60^\circ$ .



The below described screws are limited to variants according to ČSN 01 4050/DIN103, the other types of threads need to be consulted before.

## Trapezoidal Screws

Trapezoidal screws are a standard construction element designed for self-locking transfer of rotary movement to straight movement with low power given by the slick friction of the functional surfaces of its profile, lubrication and material used. The screws are designed for transfer of axial loads. The backlash between the screw and the nuts must be assured by construction.

Trapezoidal screws are usually supplied as a complex assembly element with matching nut with specifications according to customer requirements. The material, use, lubrication and adjustment of backlash resulting from operation are given by the construction of the individual customers and are not designed by the manufacturer, who however offers advisory service in this area.

The offer includes a wide portfolio of the Tr screws:

- Diameters from **12 to 100 mm**
- Thread pitch from **3 to 28 mm**
- Maximum thread length **10 m**  
(depending on the diameter and accuracy class)

The offer is extended with non-standard sizes of the nuts. Both may be produced according to specific customer requirements. Thread groove profile shape is made according to the following standards: **ISO 2901-77, ISO 2902-77, ISO 2903-77** and **ISO 2904-77** corresponding to **ČSN 01 4050** and **DIN 103**. Shafts are normally produced from steel of **14 260** and **CF53** quality. The basic treatment of the shaft is without thermal processing.

### Accuracy classes

Threaded shafts and nuts are made in three accuracy classes:

- **1 - fine** - ground profile of the shaft thread (made with high accuracy machines)
- **2 - intermediate** (lathes, mills, horizontal drills)
- **3 - rough** (machine tools without specific accuracy requirements)

### Thread accuracy is specified on the basis of:

- Thread accuracy tolerances
- Deviations of thread pitch
- Thread shape and position accuracy
- Thread surface roughness

### Principles of application of Tr screws:

- Maximum peripheral speed in the thread (quotient of speed factor and permitted rated pressure in the thread (standard speed factor is  $p_v=400$  and  $p_{dov}=5N/mm^2$ )) is **v=80 m/min** for nuts **CuSn8, CuSn12**.
- Maximum rpm (**n**) of **Tr** screw with nominal diameter **d** is:

$$n = \frac{(v \times 1000)}{(d \times \pi)} \text{ ot./min.}$$

- Maximum travel speed for pitch **P** in mm is:

$$s = \frac{(n \times P)}{1000} \text{ m/min.}$$

- The pressure **p** in **Tr** thread can be calculated as follows:

$$p = \frac{F}{(0,75 \times \pi d_s \times (d - d_s) \times \frac{H}{P})} \text{ N/mm}^2$$

Where **F** is axial force in **N**, **d<sub>s</sub>** is the mean thread diameter, **d** is nominal thread diameter, **H** is length of thread in the nut and **P** is thread pitch, all values in **mm** ( $p_{dov}=5N/mm^2$ ).

|   | ACCURACY CLASS |         |         |
|---|----------------|---------|---------|
|   | 1              | 2       | 3       |
| Thread pitch deviation permitted: (threaded length of 300 mm) | ± 0,012        | ± 0,052 | ± 0,081 |

**TRAPEZOIDAL SCREW (Tr)**

**(S) SCREW**

**(ACME) SCREW**

|    | thread pitch (mm) |    |    |    |    |   |   |    |    |    |    |    |    |    |    |    |    |
|----|-------------------|----|----|----|----|---|---|----|----|----|----|----|----|----|----|----|----|
|    | 3                 | 4  | 5  | 6  | 7  | 8 | 9 | 10 | 12 | 14 | 16 | 18 | 20 | 22 | 24 | 26 | 28 |
| 12 | AB                |    |    |    |    |   |   |    |    |    |    |    |    |    |    |    |    |
| 13 |                   |    |    |    |    |   |   |    |    |    |    |    |    |    |    |    |    |
| 14 | A                 |    |    |    |    |   |   |    |    |    |    |    |    |    |    |    |    |
| 15 |                   |    |    |    |    |   |   |    |    |    |    |    |    |    |    |    |    |
| 16 |                   | AB |    |    |    |   |   |    |    |    |    |    |    |    |    |    |    |
| 17 |                   |    |    |    |    |   |   |    |    |    |    |    |    |    |    |    |    |
| 18 |                   | A  |    |    |    |   |   |    |    |    |    |    |    |    |    |    |    |
| 19 |                   |    |    |    |    |   |   |    |    |    |    |    |    |    |    |    |    |
| 20 |                   | AB |    |    |    |   |   |    |    |    |    |    |    |    |    |    |    |
| 21 |                   |    |    |    |    |   |   |    |    |    |    |    |    |    |    |    |    |
| 22 |                   |    | AB |    |    |   |   |    |    |    |    |    |    |    |    |    |    |
| 23 |                   |    |    |    |    |   |   |    |    |    |    |    |    |    |    |    |    |
| 24 |                   |    | AB |    |    |   |   |    |    |    |    |    |    |    |    |    |    |
| 25 |                   |    |    |    |    |   |   |    |    |    |    |    |    |    |    |    |    |
| 26 |                   |    | AB |    |    |   |   |    |    |    |    |    |    |    |    |    |    |
| 27 |                   |    |    |    |    |   |   |    |    |    |    |    |    |    |    |    |    |
| 28 |                   |    | AB |    |    |   |   |    |    |    |    |    |    |    |    |    |    |
| 29 |                   |    |    |    |    |   |   |    |    |    |    |    |    |    |    |    |    |
| 30 |                   |    |    | AB |    |   |   |    |    |    |    |    |    |    |    |    |    |
| 31 |                   |    |    |    |    |   |   |    |    |    |    |    |    |    |    |    |    |
| 32 |                   |    |    | AB |    |   |   |    |    |    |    |    |    |    |    |    |    |
| 33 |                   |    |    |    |    |   |   |    |    |    |    |    |    |    |    |    |    |
| 34 |                   |    |    |    |    |   |   |    |    |    |    |    |    |    |    |    |    |
| 35 |                   |    |    |    |    |   |   |    |    |    |    |    |    |    |    |    |    |
| 36 |                   |    |    | AB |    |   |   |    |    |    |    |    |    |    |    |    |    |
| 37 |                   |    |    |    |    |   |   |    |    |    |    |    |    |    |    |    |    |
| 38 |                   |    |    |    |    |   |   |    |    |    |    |    |    |    |    |    |    |
| 39 |                   |    |    |    |    |   |   |    |    |    |    |    |    |    |    |    |    |
| 40 |                   |    |    |    | AB |   |   |    |    |    |    |    |    |    |    |    |    |
| 41 |                   |    |    |    |    |   |   |    |    |    |    |    |    |    |    |    |    |
| 42 |                   |    |    |    |    |   |   |    |    |    |    |    |    |    |    |    |    |
| 43 |                   |    |    |    |    |   |   |    |    |    |    |    |    |    |    |    |    |
| 44 |                   |    |    |    | A  |   |   |    |    |    |    |    |    |    |    |    |    |
| 45 |                   |    |    |    |    |   |   |    |    |    |    |    |    |    |    |    |    |
| 46 |                   |    |    |    |    |   |   |    |    |    |    |    |    |    |    |    |    |
| 47 |                   |    |    |    |    |   |   |    |    |    |    |    |    |    |    |    |    |
| 48 |                   |    |    |    |    |   |   |    |    |    |    |    |    |    |    |    |    |
| 49 |                   |    |    |    |    |   |   |    |    |    |    |    |    |    |    |    |    |
| 50 |                   |    |    |    |    |   |   |    |    |    |    |    |    |    |    |    |    |
| 51 |                   |    |    |    |    |   |   |    |    |    |    |    |    |    |    |    |    |
| 52 |                   |    |    |    |    |   |   |    |    |    |    |    |    |    |    |    |    |
| 53 |                   |    |    |    |    |   |   |    |    |    |    |    |    |    |    |    |    |
| 54 |                   |    |    |    |    |   |   |    |    |    |    |    |    |    |    |    |    |
| 55 |                   |    |    |    |    |   |   |    |    |    |    |    |    |    |    |    |    |
| 56 |                   |    |    |    |    |   |   |    |    |    |    |    |    |    |    |    |    |

thread diameter (mm)

- Single start screw
- Double start screw
- Single start screw according to standards
- Double start screw according to standards
- A** Delivery in one week, only in accuracy class 3
- B** of stainless material in accuracy class 3

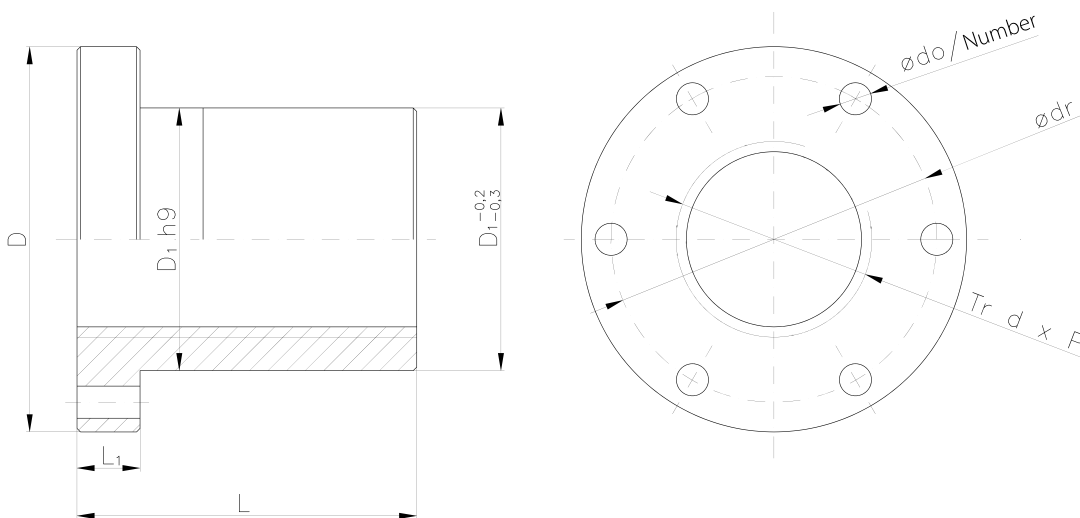


## Trapezoidal Screw Nuts

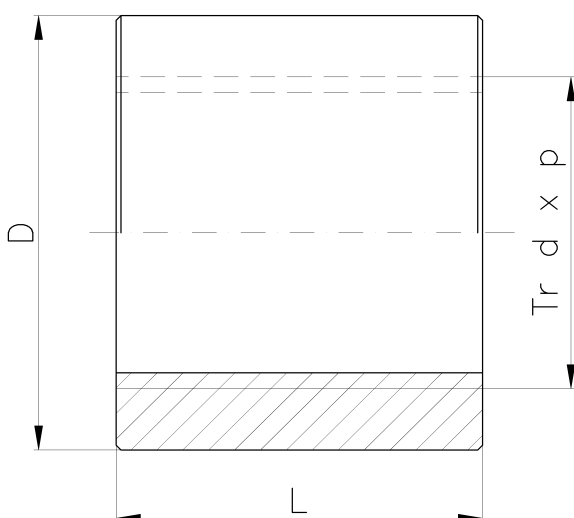
- Material recommended: cast iron **42 2425**, bronze **CuSn8** and **CuSn12**. Technical consultation is recommended before submitting a nut proposal.
- We produce trapezoidal screw nuts as a standard according to drawings, samples and requirements of the customer. Nut length ( $L$ ) depends on the calculated loading capacity in relation to the thread size, operation conditions and safety level required.

### Nuts recommended:

#### Flanged nut



#### Cylindrical nut



### Electrochemical marking

- We are able to mark the products with any text on any material.



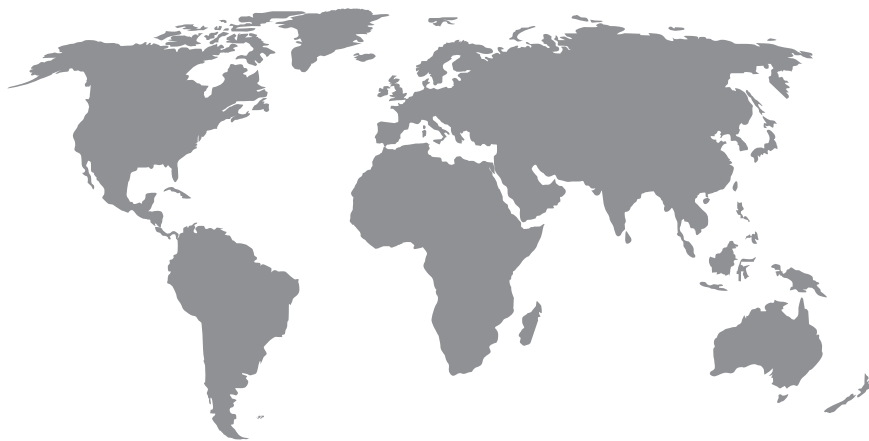
### Production options

- We are able to produce different shapes of screw drives, screw ends and nut shapes according to customer drawings.



**OFFICIAL ADDRESS**

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