

**TRAPEZOIDAL NUTS/LEAD NUTS WITH "STANDARD" PITCHES AND COMPONENTS/ACCESSORIES**

● **TRAPEZOIDAL NUT/LEAD NUT CHARACTERISTICS - RIGHT & LEFT:**

The nuts listed in the catalogue are exclusively of *Bimeccanica* production, made in Italy, using the most congenial materials that allow their application to a range that goes from TR10x2 to TR80x10.

Nuts TR90x12 and TR100x12 are normally made to the shape and dimensions defined with the client in merit of each single application.

With regard to the maximum dynamic loads and maximum travel speed using nuts in **bronze, brass and nylon** they are the same as previously described for the threaded bars and for correct use we recommend adhering to the data listed in the "Basic Theoretical Table" (see page 15) together with the information given in the "Product Guide". For steel nuts please remember that their use is restricted to manual positioning with the possibility of supporting heavy loads as described below.

The nuts with Standard pitches are made by us with shapes, dimensions and fitting holes (where applicable) in accordance with our exclusive designs and have right and left 30° trapezoidal threads machined out in accordance with norms ISO 2901-2-3-4 equivalent to DIN 103. For reasons of interchangeability of spare parts our company is committed to the maintaining of dimensions and holes of the Standard items; if for technical reasons we have to change an important dimensional quota we will automatically create a new article that will maintain previous sizes for spare parts interchangeability.

As with the threaded bars our standard production of threaded nuts with diameters and pitches are of the preceding norms UNIM 124 and exactly: TR10x3 - TR14x4 - TR25x5 - TR35x6 - TR45x8.

Nuts/lead nuts are made by us to quality tolerance **7H** (tolerances are listed on the product table for every single item) with a coupling on the bar tolerance of **7e**.

Normally we produce our nuts and relative threaded bars with an **average centre diameter of ISO tolerance** so that it guarantees good axial precision together with a good alignment with the trapezoidal screw when mounted.

**Attention: due to the geometry of the trapezoidal profile at 30° the axial play is equivalent to 1/3 of the radial play (for example: with radial play between the screw and nut of 0,30 mm the axial play is 0.10mm).**

**FOR MAINTAINING AND CONTROLLING AXIAL PLAY WE RECOMMEND EVALUATING OUR "LVZ" SUPPORTS FROM THE "COMPACT" TRANSMISSION DRIVE GROUPS AND "LXY" SUPPORTS FROM THE "EXCELLENT" GROUPS (OUR PATENETED SYSTEM) WHICH CAN BE FOUND IN OUR TECHNICAL CATALOGUE GDM.**

To meet the diverse technical needs of mechanical trapezoidal screw drive transmissions our company has increased the range of nuts/lead nuts and accessories in ready stock, in various typologies and diverse materials, all certificated, with differing qualities for a variety of applications and namely:

- **STANDARD RANGE OF NUTS/LEAD NUTS with accessories:** (DX = Right thread SX = Left thread)
  - **BRONZE FLANGED NUTS SERIES "CFB"** = **from TR10 to TR80** Dx and Sx (with or without fitting holes).
  - **BRONZE LONG FLANGED NUTS SERIES "CFB/H"** = **from TR20 to TR80** Dx and Sx (with or without fitting holes).
  - **STEEL FLANGED NUTS SERIES "CFA"** = **from TR10 to TR60** Dx and Sx
  - **NYLON FLANGED NUTS SERIES "CFN"** = **from TR10 to TR40** Dx and Sx
  - **SAFETY FLANGES WITH DUST CUPS "FDS"** (accessories). = **for flanged nuts from TR20 to TR60**
  - **DUST CUPS "BP"** (accessories). = **for flanged nuts from TR20 to TR60**
  
  - **BRONZE CYLINDRICAL LEAD NUTS "CCB"** = **from TR10 to TR80** Dx and Sx
  - **STEEL CYLINDRICAL LEAD NUTS "CCA"** = **from TR10 to TR80** Dx and Sx
  - **NYLON CYLINDRICAL LEAD NUTS "CCN"** = **from TR10 to TR40** Dx and Sx
  - **HANDWHEEL NUT FOR MANOEUVRING "CVL"** = **from TR16, 20, 25, 30** Dx
  - **WHEEL NUT FOR BLOCKING "CVR"** = **from TR16, 20, 25, 30** Dx
  - **TRAPEZOIDAL THREADED RING "GH/TR"** = **from TR20 to TR60** Dx
  - **TRAPEZOIDAL THREADED RING WITH HANDLE "GH/TRM"** = **from TR20, 25, 30** Dx
  
  - **BRASS SQUARE NUT "CQO"** = **from TR10 to TR60** Dx and Sx
  - **NYLON SQUARE NUT "CQN"** = **from TR10 to TR40** Dx and Sx
  - **STEEL SQUARE NUT "CQA"** = **from TR10 to TR60** Dx and Sx
  - **SAFETY SUPPORT "TDS"** (accessories). = **for CQA nuts from TR20 to TR60**

**Before selecting semi-finished products (bars with nut/lead nut) we suggest viewing our finished products in Technical Catalogue GDM where we offer pre-built innovative products to facilitate and accelerate the complete creation of trapezoidal screw drive movement mechanisms and with custom lengths depending on the travel required (see our website: [www.bimeccanica.it](http://www.bimeccanica.it)).**

● **TPOLOGY OF STANDARD NUTS/LEAD NUTS**

For better utilisation our Standard nuts differ in shape and type of material and are exactly:

– **FLANGE NUTS**

The most complete, because the particular flange, sufficiently dimensioned, has the double mechanical function of making it extremely easy to fit whilst guaranteeing, if mounted correctly as shown in the following applications, a perfect distribution of the load on the flange allowing maximum stability. **Available in bronze CuSn12 (TR10/80 also in versions without fixing holes), in R50 steel (TR10/60) and in nylon POM-C (TR10/40).** TR90x12 and TR100x12 are available on request, with dimensions and fitting holes to be defined.

– **CYLINDRICAL LEAD NUTS**

From the classic shape, easily applied to applications as shown in the following diagrams. **Available in bronze CuSn12 UNI 7013/72 (TR10/80), in nylon POM-C (TR10/40), in R50 steel (TR10/80),** the latter in steel differ from those in bronze and nylon for their exclusive use for manual positioning and for their external diameter which is normally larger. TR90x12 and TR100x12 are available on request, with dimensions to be defined.

– **SQUARE NUTS**

From a robust shape, that allows easy application and for a perfect fitting by machining, on request, fitting holes drilled on the sides of the nuts. **Available in brass (TR10/60), in nylon POM-C (TR10/40) and in R50 steel (TR10/60).** The latter (steel) can also be fitted to the structure of the machine by welding or by adding a safety support for heavy loads (see pages 84-87).

● **CHARACTERISTICS AND USES OF STANDARD NUTS IN RELATION TO THE TYPE OF MATERIAL**

– **B12 Bronze CuSn12 UNI 7013-72**

Alloy of copper and tin used by us to produce the nuts most used in that they offer the best compromise between resistance and smooth running. Particularly resistant to wear and to corrosion, also in marine environments. The lack of aggression towards the screw and good lubricating qualities (due to the presence of tin) allow the construction of lead nuts suitable for moving high dynamic loads, even with semi-continuous cycles and at medium/high speeds (see Basic Theoretical Table on page 15). In order to achieve the best operating conditions the bronze nuts require lubrication with specific grease as listed in our *Technical Catalogue GDM*. Mechanical resistance 270 N/mm<sup>2</sup>, HB 90/100.

– **OT58 Brass**

Copper zinc alloy from extruded bars used by us to produce square nuts that are certainly more economical compared to Bronze B12 UNI. A material stainless to atmospheric agents and having good resistance qualities. Thanks to the low coefficient of friction and good scrolling qualities it is appropriate for producing lead nuts for movements of low and medium dynamic loads. As with all the other types of nut we recommend lubrication with specific grease. Despite the superior mechanical resistance values of the OT58 it is less resistant to wear between nut and screw in respect of the Bronze B12 UNI in that the material is dryer and less auto-lubricating. Therefore, as mentioned above, it is recommended for use with low and medium loads. Mechanical resistance 350 N/mm<sup>2</sup>, HB 75/100.

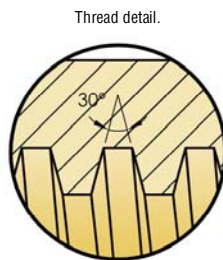
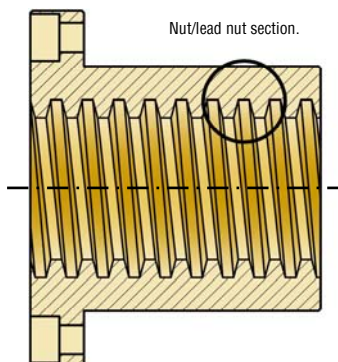
– **Black Delrin® Nylon POM-C**

We use this polymer to make our nylon nuts as it is an auto-lubricating material, not aggressive towards the screw and particularly appropriate for low load applications and high scrolling speeds. A non-toxic material, to FDA standards, and therefore also usable in the food industry. Can be used at constant temperatures between -40°C and +100°C even if, when approaching the latter temperature, its mechanical characteristics begin to diminish. The maximum dynamic load is normally 1/4 of bronze but with a sliding speed about 20% greater (see Basic Theoretical Table on page 15). Mechanical resistance 70 N/mm<sup>2</sup>.

– **R50 Steel 11SMnPB37 (W.NR: 1.0737)**

We use this material to make lead nuts that have to support static loads, using manual positioning or even low rpm movements and non continuous cycles. We recommend abundant greasing using specific greases listed in our *Technical Catalogue GDM*. Should there be a need to weld our steel nuts to a structure we always recommend using *Castolin "EC 4080"* electrodes. Should our square steel nuts be welded for cantilever support of heavy loads our Safety Support TDS should be added (see pages. 84-87) welded in support of the nut itself to eliminate load bearing risks because this type of R50 steel is not particularly appropriate for welding. Mechanical resistance 460/650 N/mm<sup>2</sup>, HB 120/200.

At the specific request of our client, after feasibility assessment by our technical department, we are able to produce nuts in materials other to those listed above such as, for example, B5 Bronze (RG85.5.5.5), Aluminium Bronze, Cast Iron,, Aluminium and various types of engineering polymers according to the use that the nut will perform.



*Made with precision machinery, they present perfect geometry and an excellent finish on the threaded profile for maximum smoothness. The tolerance is in class 7H for coupling with our bars in respect of norm ISO 2901/4.*