

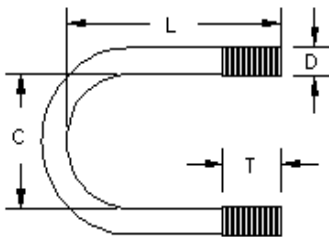


Welcome to the Spring edition of the Clamps Incorporated Newsletter
Clamps Tech

General Definitions

U-bolts come in all sizes and shapes, with many common characteristic features. In the manufacturing of millions of these items, there is a common nomenclature that is used throughout the industry for many of the dimensional characteristics. The illustration below demonstrates the dimensioning and symbology of these rolled-threaded products.

U-Bolt - Round



Typical Dimensional Characteristics

(L) Inside Leg Length:
Distance for the inside radius or flat to the end of the leg.

(C) Diameter:
The inside diameter of the U-Bolt.

(D) Thread Diameter:
The maximum outside diameter of the threads measured from root to root.

(T) Thread Length:
The full thread length shall be measured, parallel to the axis of the thread, from the extreme end of the bolt to the last completed (full form) thread that will accept the gauge or nut

Guidelines for U-Bolt Design

Introduction -

The purpose of this guide is provide informal rules of thumb that will allow U-Bolt designs to be consistently manufactured within tolerances of modern practices while avoiding unnecessary cost.

Rolled Threads vs. Cut Threads -

Cut threads are formed by metal removal to form the thread. Rolled threads are formed by metal rearrangement. This metal rearrangement on rolled threads provides a fine surface finish, strong threads with work-hardened surface, and high rates of production with no material loss. The strength of the rolled thread, based on tensile load is typically 7% higher than that of cut thread.

Wire Diameter for 2A Threads -

The value and tolerances of blank diameter for imperial or metric rolled threads should be governed by published standards for pitch diameter 2A or 6g. The following are desired wire diameter of the stated 2A thread sizes.

UNC-2A	
Thread Size	Wire ϕ
1/4-20	0.2146-0.2153
5/16-18	0.2732-0.2740
3/8-16	0.3309-0.3318
7/16-14	0.3874-0.3383
1/2-13	0.4470-0.4480
9/16-12	0.5050-0.5070
5/8-11	0.5630-0.5650
3/4-10	0.6785-0.6815
7/8-9	0.7960-0.7990
1"-8	0.9120-0.9150

UNF-2A	
Thread Size	Wire ϕ
1/4-28	0.2242-0.2248
5/16-24	0.2825-0.2832
3/8-24	0.3449-0.3457
7/16-20	0.4016-0.4024
1/2-20	0.4641-0.4649
9/16-18	0.5170-0.5190
5/8-18	0.5840-0.5860
3/4-16	0.7040-0.7070
7/8-14	0.8230-0.8260
1"-12	0.9400-0.9430

Material Selection -

The determining factor in material selection of U-Bolts is generally the load carrying capacity of the unit. The forces experienced in the joint, including normal shock and cyclic, must be evaluated to determine the capacity required. In conjunction with published inch and metric standards, a nominal diameter should be selected to provide a sufficient capacity with a safety margin. Torque requirements during assembly may demand a higher grade of material than the load requirements. The hardness of materials of both the bolt and nut are critical. Selection of washer material also affects torque readings.

Plated U-Bolts may also be baked after zinc plating to avoid hydrogen embitterment at the radii and thread roots, especially bolts of high tensile material. Stainless steel grades are also available for corrosion resistance and improved appearance. There are several stainless steel grades that are cost effective for rolled threads.

Clamps Incorporated assumes no responsibility for the use of these guidelines by any party. The design, testing, construction, inspection and use of any products are the responsibility of the customer. Clamps Incorporated manufactures' products to customer specifications and assumes no liability beyond that point.

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