

## **THREADED FASTENINGS FROM ANCIENT TIMES TO NOWADAYS**

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The most common way of joining elements of various structures is a threaded fastening which is a unit coupling in the form of a thread. It is widely used in construction, pipeline installation, mechanical engineering and many other industries. The popularity of this method is due to the following advantages: high reliability and long service life; creation of detachable connections, ease of installation and dismantling using publicly available tools; tightening force control during assembly; small weight and dimensions of fasteners; wide availability, large selection of fastener sizes [1].

Threaded assemblies of any kind perform several basic functions. The main purpose is to ensure a tight fastening of the joined parts with the achievement of the required value. In addition, the parts are fixed in a predetermined position, and the possibility of their displacement during the operation of the structure or mechanism is prevented. Another common purpose of threaded connections is to provide a given distance between parts.

Threaded fastenings are classified into bolted, screw and stud. Bolted connections differ from others in that they use bolts as a fastener. A bolt is a fastener in the form of a rod with an external thread at one end, with a head at the other, forming a connection with a nut or a threaded hole in one of the connected products. Screw connections use screws as a fastener. A screw is a fastener for connecting or fixing parts. It is made in the variant of the rod, together with an external thread in one end, and also a system component that transmits a rotating period, in another; This useful component has every chance to be: a head with a slot, a head with knurling (in the frontal border) or, in the

presence of a lack of a head, a notch at the end of the rod. The screw stands out from the screw along with the fact that it does not contain a cone at all in the end and the presence of screwing does not form threads in the used material [2].

Screws also have every chance of being a fulcrum for the purpose of rotating elements, serve as a guide for rectilinear or rotary motion, and can also be used for other purposes. The screw mechanism was already known in ancient. In the 1st century BC wooden screw gears were widely used in the Mediterranean countries in the mechanisms of oil and wine presses. Handicraft screwdrivers originated in the end of the 16th century. At first, screws were available as one of various types of fasteners in the construction, and in addition were used in carpentry and blacksmithing. The extensive use of iron screws started with the appearance of motor vehicles in 1760-1770.

A stud is a construction fastener, which is a rod with an external thread. It is used in conjunction with a nut or other part having a metric thread. The design and dimensions of the studs are standardized (GOST 22032-76-22043-76 series, DIN 525, DIN 835, DIN 939, DIN 940, DIN 975, DIN 976). The stud is designed to connect parts with smooth or threaded holes. It is manufactured with a nominal thread diameter from 2 to 52 mm with a different combination of large and small pitches.

## References

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