

# What is a thread?

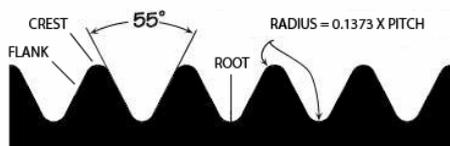
The Archimedes Screw which consists of a cylinder with an internal continuous thread is believed to be the first screw thread made. It is believed that the Archimedes Screw is a Greek invention, most probably by the 3rd century BC polymath Archimedes. The thread form used today uses the same technique as the Archimedes Screw which was used to raise water to a higher level by placing one end into water and the cylinder rotated, this resulted in water rising to a higher level. In the modern screw you have an external and an internal threaded parts.

In the late 18th century modern machinery was born increasing the need and capability to form threads. In 1797 Henry Maudsley created the modern day lathe, capable of cutting threads with great precision.

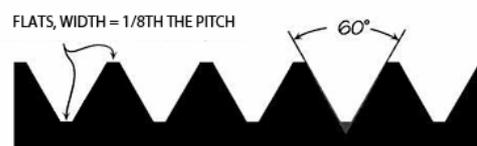
The problem was there was no standard for threads resulting in people using their own standard. Joseph Whitworth who worked for Maudsley as an apprentice, set himself a task of devising a standard for threads, he collected Bolts from all over England. Then in 1841 he proposed as a standard a thread form with a 55 degree angle and the tops and bottoms of the thread rounded. The Whitworth thread system was created and is still used today.

In 1864 in America the Seller thread form was created, the main differences were that the angle degree was 60 degrees and the tops and bottoms of the thread flattened. The flatten thread creates problems as the process of manufacture results in high stresses at the roots of threads, this results in cracks and broken fasteners.

The diagram below shows the difference between the two systems and the three main elements of a thread, the root at the bottom of the thread, the crest the top of the thread and the finally the flank which joins the root and the crest.



Whitworth



Seller

Since the Whitworth and Seller systems there has been many systems, the most used systems is ISO Metric Screw Threads to BS 3643 Part One and Two. These thread forms are used in the majority of standards such as BS EN 15048, BS EN 143999, BS 4395, DIN 933, DIN 931, DIN 934, ISO 4017, ISO 4032 ETC

Threads are classed as internal and external, external threads are found on Bolts (part threaded items with a head), Set Screws (fully threaded items with a head) and Studding (fully threaded items with no head). Internal threads are found in Nuts (Fullnuts) and threaded holes. Due to the introduction of standards the two (external and internal) now work together, before you would make the internal thread fit the external as there was no standards.

In the UK metric threads in a course fit is generally used, the 'M' in the description refers to metric and the numbers refers to the nominal diameter, for example M20, is metric with a 20 mm nominal diameter.