

DIE HEAD, THREAD CUTTING OR THREAD ROLLING?



COVENTRY CHS DIE HEAD



ALCO AXIAL THREAD ROLLING HEAD

Thinking of using a threading head to produce threaded components in quantity? Wondering which will be your best option. Here are a few facts that may help you to decide.

Firstly you need to choose between thread cutting or rolling, either of which can be accomplished by various methods.

You can roll a thread on most machines using a thread rolling head, you can purchase a thread rolling machine, or for small quantities you can even use a thread rolling die, though these are only practical for diameters up to around 16mm.

Thread rolling machines, and the rolls required are generally expensive, so are really only practical for large repeating quantities. Thread rolling dies can be used for small quantities, they are relatively cheap, but remember that a lot of power is required if working by hand!

Thread rolling heads are not cheap compared to thread cutting die heads, but they are easy to use, cover a range of threads and the heads, and most rolls for standard threads, are usually readily available. They are also quite easy to maintain.

Thread cutting die heads have similar advantages as thread rolling heads, but come in a greater variety, best known are Coventry and Landis type, and copies thereof. There are also thread cutting machines available, mainly for pipe threads, and of course thread cutting dies.

We will only be discussing threading heads here. If you need information about machines or dies please ask us.

When deciding whether you should use a cutting or rolling head you should consider:

a) What are the requirements for the thread?

Rolled threads are much stronger than cut threads. Generally in a situation where the thread is liable to be stressed a rolled thread may be required. For example most aircraft component threads **MUST** be rolled. Similarly car suspension units usually have rolled threads. If you are in doubt it may be worth checking with the customer. Rolled threads are also burnished and work hardened by the rolling process, they **LOOK** better!

Cut threads do not have the same strength or appearance, but for most purposes they are fine.

b) What is the quantity required.

For small quantities, where rolled threads are not required cutting heads may be the most economical answer. Chasers are cheap and usually readily available, thread changeover is simple. Where large quantities are involved it may be worth considering thread rolling, even if rolled thread quality is not required, for the following reasons:

1) The actual threading speed is much faster than for cutting. It is not true that because of the process thread rolling should be carried out more slowly. The opposite is in fact true. Also, the tougher the material the faster you go! Really! This means that the cycle time to roll a thread is much shorter than for cutting the same thread in the same material.

2) When cutting, the blank is at or around the major diameter. When rolling you start at the pitch diameter and 'grow' the thread, so the blank is smaller. If you are doing millions and can order the raw material at the pd think of the savings.

c) Threads close to a shoulder?

If you need to thread really close to a shoulder you have to take into account the thickness of the front plate when considering thread rolling heads or Coventry type heads.

There is not much that you can do with a standard axial thread rolling head apart from making the front plate thinner, which is not really recommended!

Coventry type die heads also have a front plate, but this can be modified to allow chasers with a projection to protrude beyond it. These projecting chasers are more expensive than standard. The real answer is a Landis type die head that does not have a front plate. Chasers are cheap.

d) Right or left hand threads.

When thread rolling with a standard axial head, generally a left hand threading head is required. The thread is then produced with the same rolls that would be used in a right hand thread. Left hand rolling heads are around 50% more expensive than right hand.

For Landis type the same head and chasers as for right hand is used but a new set of chaser blocks has to be fitted, not cheap to buy.

Coventry type heads merely require that a set of chasers for the left hand thread are fitted, cheap and simple, and usually readily available for most standard threads.

e) Type of component

Consideration is also required here! If you are threading pipe a standard thread roller or Coventry type head, which operate radially may crush it. Landis type is the simple answer as threading is tangential so no such pressure is applied.

If the thread is small in diameter rolling may be difficult and the blank may need to be ground to diameter. If the diameter is too large the spare material will be forced laterally causing taper.

You will need to select the right type of head if using Coventry type on short, fine threads of small diameter, especially in brass or other soft material. A standard 'pull off' action head may pull the thread off! A head with an external trip may be required.

f) Component material

Thread cutting heads can cope with just about any material. It is simply a matter of having the correct geometry on the chasers.

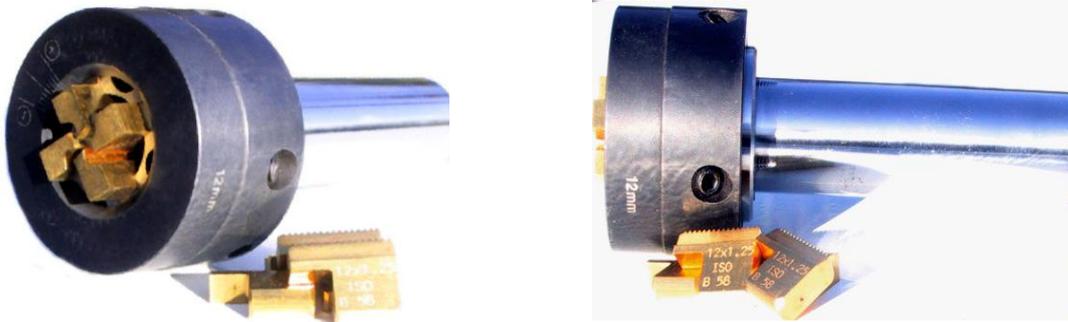
For thread rolling the material must be capable of elongating and the tensile strength must not be too great. Your steel supplier should be able to tell you if a material will roll or not.

g) On CNC's?????

CNC machines were designed to reduce cycle time and costs. The longest process is single point threading. Also long threads at small diameters can suffer from bending caused by the pressure exerted by the insert, resulting in pitch error.

Many engineers have adapted thread rolling and Coventry dieheads to overcome these problems, single pass threading, no pitch error!

There is also a specialised Coventry type head available. Interested? Call us.



Wiseman Threading Tools Ltd, 11 Padgets Lane, South Moons Moat, Redditch B98 0RA UK
www.threadtools.com info@threadtools.com 0044(0)1527 520580